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*Transmitted Via* Electronic Mail

June 24, 2016

Ms. Alice Yeh
Remedial Project Manager
U.S. Environmental Protection Agency, Region II
Emergency and Remedial Response Division
290 Broadway, 19th Floor
New York, NY 10007-1866

Re: Combined Sewer Overflow/Stormwater Outfall Program Phase I Evaluation and Recommendation Report Revision 2

Dear Ms. Yeh:

Please find enclosed *CSO/SWO Phase I Evaluation and Recommendation Report, Revision 2* dated June 2016 and prepared in accordance with the Combined Sewer Overflow (CSO) / Stormwater Outfall ( SWO) Quality Assurance Project Plan (QAPP) Revision 2 of the Recommendation Report incorporates changes resulting from comments contained in the following documents:

- *Phase I Data Usability Report Aug. 2014 - EPA Comments* - USEPA provided initial comments on the DQUAR on August 6th, 2015.
- *Tierra Responses to USEPA Comments on DQUAR_Final 09.18.15* – Tierra submitted a Response to Comment (RTC) document on September 18, 2015, which provided responses to USEPA comments received on August 6th, 2015.
- *CDM Smith Comments_CSO -SWO Phase I Tierra Response to Comments* – CDM Smith (EPA Contractor) submitted final comments to the DQUAR on November 12, 2015.
- *Revised Report Review 05.06.2016*- CDM Smith submitted comments on Revision 1 of the Recommendation Report submitted April 1, 2016.

If you have any questions regarding the attached report, please feel free to contact me at 732-246-5920.

Sincerely,

Brian Mikucki

Brian Mikucki
Senior Environmental Scientist
On behalf of Occidental Chemical Corporation

(as successor to Diamond Shamrock Chemicals Company)

Enclosures

Cc: Enrique Castro, Tierra Solutions, Inc.
Clifford Firstenberg, Tierra Solutions, Inc.
Diane Waldschmidt, Environmental Data Services
Kavin Gandhi, ARCADIS
Alain Hebert, ARCADIS

**Combined Sewer Overflow/Stormwater Outfall Investigation**

# Phase I Evaluation/ Recommendation Report

**Tierra Solutions, Inc.**

**East Brunswick, New Jersey**

June 2016

Revision 2

**Tables**

## Figures



## Appendices

## Attachment

## Acronyms and Abbreviations

| | |
|---|---|
| CFC | continuous flow centrifuge |
| CH | clean hands |
| COC | constituent of concern |
| COPC | constituent of potential concern |
| COPEC | constituent of potential ecological concern |
| CSO | combined sewer overflow |
| CSO/SWO S&AP | Combined Sewer Overflow/Stormwater Overflow Sampling and Analytical Plan |
| DH | dirty hands |
| DOC | dissolved organic carbon |
| EDL | estimated detection limit |
| HSM | high-solids mass |
| LPRSA | Lower Passaic River Study Area |
| LSM | low-solids mass |
| MDL | method detection limit |
| mg/L | milligrams per liter |
| NOAA's NWS | National Oceanic and Atmospheric Administration's National Weather Service |
| PCB | polychlorinated biphenyl |
| PCDD | polychlorinated dibenzo-p-dioxin |
| PCDF | polychlorinated dibenzofuran |
| Phase I Report | Phase I Evaluation/Recommendation Report |
| POC | particulate organic carbon |

| | |
|---|---|
| PQL | project quantitation limit |
| POTW | publicly owned treatment works |
| PVSC | Passaic Valley Sewerage Commission |
| QA | quality assurance |
| CSO/SWO Investigation QAPP | Combined Sewer Overflow/Stormwater Outfall Investigation Quality Assurance Project Plan |
| QC | quality control |
| SIM | selective ion monitoring |
| SOP | standard operating procedure |
| SVOC | semivolatile organic compound |
| SWO | stormwater outfall |
| TAL | Target Analyte List |
| TDS | total dissolved solid |
| TEPH | total extractable petroleum hydrocarbons |
| Tierra | Tierra Solutions, Inc. |
| TOC | total organic carbon |
| TSS | total suspended solids |
| USEPA | United States Environmental Protection Agency |
| VOC | volatile organic compound |

# 1. Introduction

This Phase I Evaluation/Recommendation Report (Phase I Report) has been developed by Tierra Solutions, Inc. (Tierra), on behalf of Occidental Chemical Corporation, the successor to Diamond Shamrock Chemicals Company (formerly known as Diamond Alkali Company). This Phase I Report documents the evaluation of data collected as part of Phase I of the combined sewer overflow/stormwater outfall (CSO/SWO) investigation implemented under the U.S. Environmental Protection Agency- (USEPA-) approved Combined Sewer Overflow/Stormwater Outfall Investigation Quality Assurance Project Plan (QAPP; Tierra 2013). The QAPP was developed to guide the collection of CSO, SWO, and publicly owned treatment works (POTW) samples from within the Lower Passaic River Study Area (LPRSA). The main objective of the CSO/SWO investigation is to characterize and quantify contaminants in both particulate- and dissolved-phases present in runoff discharging to the LPRSA via CSO and SWO conveyances, such that subsequent determinations of contaminant loadings can be made using models, developed by others, for the lower Passaic River.

The unique challenge of the CSO/SWO investigation is the quantification of organic contaminants found in the effluent of CSOs and SWOs, which are typically bound to particulates and, to a lesser degree, in the dissolved-phase. Quantitation limits associated with the particulate-phase of the effluent are particularly challenging to achieve, in that quantitation limits needed to reach the program data quality objectives require a sufficient mass of solids be collected for detection via standard, USEPA-approved laboratory analyses. The challenges associated with collecting a sufficient mass of solids for analysis are one of the focuses of the Phase I investigation.

Various sampling methods have been used previously in the LPRSA to collect the necessary solids mass for analysis, with varying results. As such, a two-phased approach for the CSO/SWO investigation was developed in coordination with the USEPA. This two-phased approach incorporates, as Phase I, an initial side-by-side sampling program for evaluating three sampling approaches to inform the selection of the most appropriate sampling approach to quantify contaminants in the solid- (particulate), dissolved-, and whole water-phases: low-solids mass (LSM), high-solids mass (HSM), and whole water. Phase II of the program will consist of collecting CSO, SWO, and POTW samples at target locations using the sampling and analytical technique(s) selected after evaluation of Phase I results (the subject of this Phase I Report).

The LSM approach is a modification of the methods described in the USEPA Combined Sewer Overflow/Stormwater Overflow Sampling and Analytical Plan, Revision No. 2.0, August 2008 (CSO/SWO S&AP; USEPA 2008). The CSO/SWO S&AP was, in turn, based on methods that were implemented in the 1998 to 2004 Contaminant Assessment and Reduction Program (Great Lakes Environmental Center 2008) and the 2008 USEPA CSO/SWO solid-phase sampling conducted by Malcolm Pirnie, Inc. (2008). The LSM approach requires modifications to standardized analytical methods for solids sample analyses because a relatively small mass of particulates is acquired during the sample collection procedure. The HSM approach was proposed in the LPRSA Remedial Investigation – Combined Sewer Overflow Investigation, Volume 1, Work Plan/Field Sampling Plan Revision No. 1 (Tierra 2002). The HSM approach calls for the collection of a greater mass of particulates than the LSM method, and similar to the mass specified in standardized analytical methods. The whole water approach is similar to the LSM approach, except that the particulate and dissolved-phases are not separated prior to analysis.

### 1.1 Organization of Report

The remainder of this Phase I Report is organized as follows:

- *Section 2 – Summary of Field Activities:* Summarizes the three sample collection methods and associated sample collection activities completed.
- *Section 3 – Summary of Evaluation Process:* Summarizes the process used to evaluate the implementability and effectiveness of the three sample collection methods.
- *Section 4 – Implementation Evaluation:* Summarizes the evaluation of the implementability of the three sample collection methods.
- *Section 5 – Analytical Data Evaluation*: Summarizes the evaluation of the analytical data obtained for the three sample collection methods.
- *Section 6 – Conclusions/Recommendations:* Summarizes the conclusions of the data evaluation process and provides the recommended path forward.
- *Section 7 – References:* Provides a summary of the references used in this Phase I Report.

# 2. Summary of Field Activities

Phase I sampling consisted of collecting and analyzing samples using three sample collection methods (LSM, HSM, and whole water) during two precipitation events at the selected CSO (Clay Street in Newark, New Jersey). The field sample collection activities were implemented in accordance with the Field Standard Operating Procedures (SOPs) contained in the QAPP (Tierra 2013). It should be noted that the QAPP originally specified collection of samples from two different CSO locations: Clay Street CSO in Newark, New Jersey and Ivy Street CSO in Kearny, New Jersey. However, due to access limitations to the Ivy Street CSO imposed by the City of Kearny and to meet the Phase I implementation schedule, the USEPA and Tierra decided to collect an additional sample at the Clay Street CSO (for a total of two) in lieu of sampling at the Ivy Street CSO during Phase I. Modifications were made to the QAPP (Tierra 2013) to address this change.

## 2.1 Sample Collection System

A sample collection system was designed to collect all three sample types (LSM, HSM, and whole water) simultaneously from the same effluent stream and over the same period of time by controlling the flow rate of effluent entering different sample collection tanks and the continuous flow centrifuge (CFC). The sample collection system utilized an enclosed trailer as a secure platform for mounting/housing the sampling equipment and controls. Sampling equipment included a bulk sample collection tank, peristaltic pumps (one large-diameter peristaltic pump and three small-diameter perist altic pumps), CFC, and associated tubing and fittings. A stand-alone tow-behind generator was staged near the sample collection trailer during sample collection. Figures 2-1, 2-2, and 2-3 present the schematic of the sample collection equipment setup. SOP No. 2 – Pre-Mobilization and SOP No. 3 – Mobilization, Bulk Sample Collection, and Transportation (Tierra 2013) provide additional details regarding the sample collectio n system.

During each sampling event, a weighted rod/tubing assembly (Figure 2-4) was deployed into the manhole of the diversion chamber at the Clay Street CSO for bulk sample collection. Large-diameter intake tubing (i.e., 1.125-inch outside diameter for large-diameter high-flow peristaltic pump) was secured to the weighted rod/tubing assembly and connected to a large-diameter high-flow peristaltic pump in the trailer to pump bulk sample for collection. Three sample ports were installed along the large-diameter intake tubing, two before, and one after the CFC. Small-diameter sample tubing and small-diameter peristaltic pumps were connected to the sample ports to pump bulk sample from the large-diameter intake tubing line into two bulk sample collection tanks (whole water/LSM and HSM dissolved bulk sample collection tanks). From an initial single sample flow stream, flow was continuously diverted to the Teflon®-lined (double-lined) whole water/LSM bulk sample collection tank (via the second sample port to generate the LSM and whole water samples) and the CFC (to generate solids in the centrifuge for HSM particulate analysis and CFC effluent for HSM dissolved analysis). A portion of the CFC effluent that passed through the CFC was diverted via the third sample port to the Teflon®-lined (double-lined) HSM dissolved bulk sample collection tank to generate HSM dissolved samples. The flow rate to each bulk sample collection tank was controlled so that the whole water/LSM bulk sample collection tank filled in approximately the same time as the HSM dissolved bulk sample collection tank. The excess effluent that passed through the CFC was returned to the same manhole via large-diameter tubing downstream of the CFC and HSM dissolved bulk sample collection tank.

The effluent entered the CFC from the bottom through a stationary feed nozzle and is directed towards the CFC bowl. A variable frequency drive mounted on the trailer was used to operate and control the speed of the CFC. Solids in the bulk effluent were forced to the bowl wall by centrifugal force. The interior of the CFC bowl was lined with a Teflon® liner to capture the separated solids. The clarified liquid was continuously discharged through the top of the centrifuge.

Following collection of effluent into the bulk sample collection tanks, aqueous (LSM bulk, HSM dissolved, and whole water) samples were collected using small-diameter peristaltic pumps and dedicated Teflon® tubing from the bulk sample collection tanks. The LSM bulk samples were further processed in analytical laboratories, via filtration, to generate LSM particulate and LSM dissolved samples for analysis. HSM particulate samples were collected from the solids retained inthe CFC bowl and liner for laboratory analysis. SOP No. 4 – Sample Processing and Collection (Tierra 2013) provides additional details on sample processing.

Upon receipt of LSM bulk samples by the laboratory, the equipment and procedures described in SOP No. L-24 – LSM Bulk Sample Filtration (Tierra 2013) were utilized to filter the LSM bulk sample, thereby generating LSM particulate and LSM dissolved samples for analysis. Post-filtration of the LSM bulk sample, particulate material captured on the filter media was put forward for analysis as the LSM particulate sample, while the filtrate was analyzed as the corresponding LSM dissolved sample. Two approaches were included in SOP No. L-24 – LSM Bulk Sample Filtration to filter the LSM bulk samples. The primary approach involved the use of pressurized filtration and a flat glass fiber filter(s). The secondary approach utilized a system by which bulk sample is pumped through a wound glass fiber filter cartridge and a flat glass fiber filter in series. The secondary approach was included for use as a contingency when/if excessive clogging was observed during implementation of the primary approach due to sample particulate mass characteristics, such as high total suspended solids (TSS) content or large individual particulate size.

During bulk sample collection at the manhole, TSS/total dissolved solids (TDS) grab samples were collected every 30 minutes via the first sample withdrawal port installed along the large-diameter intake tubing prior to the CFC and whole water/LSM bulk sample collection tank. Additionally during sample collection, selected physiochemical water quality parameters (conductivity, turbidity, and temperature) were measured (logged continuously and manually recorded every 30 minutes using a water quality meter), water depth was measured at the sample collection manhole, and flow data were recorded. An in-line flow meter, located downstream of the CFC, was used to monitor and record flow rate approximately every 30 minutes.

Grab metals samples (including mercury and methyl mercury) were collected in accordance with SOP No. 5 – Metals Sampling via Method 1669 Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels (USEPA 1996) (Tierra 2013). This methodology has been developed based on USEPA Method 1669: Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels (USEPA

1996). Grab (total and dissolved) samples for trace metals analysis, including mercury and methyl mercury, and a TSS sample were collected directly from the manhole into laboratory-supplied containers using a separate peristaltic pump and laboratory-supplied Teflon® tubing. This sampling method was employed so that metals samples could be collected using "clean hands" (CH) and "dirty hands" (DH) sampling methods that minimize potential sample contamination from trace metals during sample collection. Sampling activities were conducted with care to minimize exposure of the sample to atmospheric, human, and other sources of potential metals contamination. Dissolved metals samples were collected first by field-filtering (via an in-line filter) the effluent followed by collection of samples for total metals analysis.

### 2.2 Mobilization for Sample Collection

During Phase I, Tierra conducted weather monitoring on a daily basis using multiple sources to evaluate timing of mobilization for sample collection. For a precipitation event to trigger mobilization for sample collection, the event must have anticipated to produce at least 0.2 inch of rain with an average intensity of at least 0.03 inch per hour with no more than 4 consecutive dry hours during the event. Following a decision to mobilize for sample collection, staff mobilized the sample collection system to the sampling location. Tierra coordinated/communicated with Passaic Valley Sewerage Commission (PVSC) to determine timing of the regulator gate valve closing at the Clay Street CSO and appropriate time for initiating sample collection. Sample collection was only initiated after PVSC confirmed that the regulator gate valve was closed at the Clay Street CSO and that an overflow was occurring. In addition, a sidewalk occupancy permit was obtained in advance from the City of Newark to stage the sample collection system along the sidewalk at the Clay Street CSO; the Newark Police Department were also contacted to provide traffic control. Following bulk sample collection, the sample collection system was transported back to the processing facility at 80 Lister Avenue in Newark, New Jersey. Samples were shipped to analytical laboratories the day after bulk sample collection in accordance with the procedures outlined in the QAPP (Tierra 2013).

### 2.3 Sample Collection – Clay Street Combined Sewer Overflow

Phase I sampling was completed at the Clay Street CSO between June 2013 and April 2014. It was critical that sufficient sample mass and/or volume be obtained to accomplish the primary objective of this phase: the evaluation and selection of the most appropriate sampling method for each analytical group. For this reason, an analytical hierarchy was established for sample collection. For a given sampling event, if sufficient volume was obtained to complete sampling via the three methods for the analytical groups and matrices, then samples were generated in the sequence described in the analytical hierarchy detailed in the QAPP (Tierra 2013) (with the exception of samples for volatile organic compound [VOC] analysis, which were collected first). In addition to the sample mass/volume required for primary sample analysis (including quality assurance/quality control [QA/QC] samples) contingency sample mass/volume was collected and shipped to the laboratories to mitigate any potential issues related to sample breakage/loss during sample shipment and analysis. Multiple attempts were needed during each sampling event at the Clay Street CSO to collect all samples (primary and contingency) for the target analytical groups using the three sampling approaches.

Table 2-1 summarizes the number and type of samples collected and analyzed during each sampling event/attempt as part of the Phase I sampling program.

**Table 2-1**
**Summary of Samples Collected and Analyzed**

| Event and Attempt | Sample Identification | Date | Collection Method and Analytical Parameters* | | |
|---|---|---|---|---|---|
| | | | HSM | LSM | Whole Water |
| Event #1, *Attempt #1*[b] | PR1CSOCLY**-01A<br>PR1**DUP-01A | June 10, 2013 | PCDDs/PCDFs, PCB congeners | PCDDs/PCDFs, PCB congeners | PCDDs/PCDFs, PCB congeners, metals, mercury, and methyl mercury |
| Event #1, *Attempt #2* | PR1CSOCLY**-01B<br>PR1**-DUP-01B | July 1, 2013 | All[a], excluding PCDDs/PCDFs, PCB congeners, POC, grain size, metals, mercury and methyl mercury | All[a], excluding PCDDs/PCDFs, PCB congeners, TOC, grain size, VOCs, cyanide, TEPH, metals, mercury and methyl mercury | All[a], excluding PCDDs/PCDFs, PCB congeners, DOC, POC, metals, mercury and methyl mercury |
| Event #1, *Attempt #3*[c] | PR1CSOCLY**-01C<br>PR1**-DUP-01C | April 30, 2014 | PCDDs/PCDFs, PCB congeners, chlorinated herbicides | PCDDs/PCDFs, PCB congeners, chlorinated herbicides | PCDDs/PCDFs, PCB congeners, chlorinated herbicides |
| Event #2, *Attempt #1* | PR1CSOCLY**-02A<br>PR1**-DUP-02A | October 7, 2013 | VOCs | - | VOCs |
| Event #2, *Attempt #2*[b] | PR1CSOCLY**-02B<br>PR1**-DUP-02B | December 7, 2013 | All[a], excluding VOCs, grain size, POC, metals, mercury and methyl mercury | All[a], excluding VOCs, TOC, grain size, cyanide, TEPH, metals, mercury and methyl mercury | All[a], excluding VOCs, DOC, POC |

**Notes:**

a. All includes the following analyses: polychlorinated dibenzo-p-dioxins/polychlorinated dibenzofurans (PCDDs/PCDFs), polychlorinated biphenyl (PCB) congeners, Aroclor PCBs, organochlorine pesticides, semivolatile organic compounds (SVOCs), SVOC selective ion monitoring (SIM), chlorinated herbicides, metals, mercury, methyl mercury, cyanide, VOCs, total extractable petroleum hydrocarbons (TEPH), TSS, TDS, total organic carbon (TOC), particulate organic carbon (POC), dissolved organic carbon (DOC), and grain size.

b. Grab total and dissolved metals (including mercury and methyl mercury) samples were collected on June 10, 2013 (Event #1, Attempt #1) and December 7, 2013 (Event #2, Attempt #2).

c. During Event #1, Attempt #1, two types of solid material ("fine" and "non-fine paper like material") were recovered in the centrifuge bowl. To be consistent with sediment homogenization implemented in subsequent events/attempts (i.e., "fines" and "non-fines" were combined and homogenized), PCDDs/PCDFs and PCB congener samples were collected during Event #1, Attempt #3 (which occurred after both Event #2 attempts) to replace the Event #1, Attempt #1 PCDDs/PCDFs and PCB congener results. In addition, chlorinated herbicides were collected during Event #1, Attempt #3 to obtain an additional set of herbicide data due to a laboratory error identified during the herbicide analysis of the HSM particulate sample. Laboratory results indicated that a laboratory control sample associated with the herbicide data had failed during Event #2, Attempt #2.

* Grab TSS/TDS samples were collected every 30 minutes during each sampling event/attempt in addition to the TSS/TDS samples collected as part of HSM, LSM, and whole water sampling methods.

** = Two-character code to indicate sample matrix (e.g., "HP" for HSM particulate).

\- = sample not collected/analyzed.

The PCDDs/PCDFs, PCB congeners, and organochlorine pesticides were analyzed by Vista Analytical in El Dorado Hills, California. Brooks Rand laboratory in Seattle, Washington analyzed the total and dissolved metals (including mercury and methyl mercury) samples. The remainder of the analyses was performed by TestAmerica in Burlington, Vermont.

### 2.4 Decontamination/Cleaning

Applicable decontamination procedures were followed throughout the Phase I sample collection program in accordance with SOP No. 6: Decontamination included in the QAPP (Tierra 2013). Between sampling events, a full decontamination of the sample collection system was performed in accordance with Section 2.2.2 of SOP No. 6: Decontamination, included in the QAPP (Tierra 2013). Field sampling equipment designated for analyses other than trace metals (i.e., CFC bowl, CFC bowl Teflon® liner, CFC components, stainless steel fittings, and stainless steel tools used for HSM particulate sample collection) was decontaminated prior to the first sampling attempt for each event. Dedicated sampling equipment (i.e., CFC bowl Teflon® liner, Teflon® tank liners, and small- and large-diameter Teflon® sample tubing) were replaced with new dedicated sampling equipment between events.

Between sampling attempts (e.g., between Attempts #1 and #2 of Event #1), non-dedicated sampling equipment used for HSM particulate sample collection (e.g., CFC bowl, CFC bowl Teflon® liner, CFC components, stainless steel bowls and spoons) was fully decontaminated in accordance with Section 2.2.3 of SOP No. 6, included in the QAPP (Tierra 2013). Note that permanently attached stainless steel fittings associated with the sampling system prior to entry into the CFC bowl were not fully decontaminated; however, a "gross cleaning" procedure was followed as per SOP No. 6 by circulating deionized water through the system. Dedicated sampling equipment (Teflon® tank liners and Teflon® tubing) were not replaced between sampling attempts (unless damaged) as per SOP No. 6.

## 3. Summary of Evaluation Process

Phase I data was evaluated, on an analytical group basis, for each sampling approach using the following criteria as defined in the QAPP (Tierra 2013):

- Implementability of field sampling and sample processing activities
- Ability to generate sample mass/volume to accommodate the full target analytical groups
- Ability of laboratories to generate usable data
- Ability to generate greater frequency of detection for analytes that are constituents of potential concern (COPCs) and/or constituents of potential ecological concern (COPECs) listed in the Lower Eight Miles of the Lower Passaic River Feasibility Study Report (The Louis Berger Group 2014)
- Ability to generate greater frequency of detection for analytes within a given analytical group.

Analytical groups included in the evaluation were limited to those where samples were collected using two or more of the sampling methods (HSM, LSM, and/or whole water); therefore, the Phase I evaluation process included comparison of the analytical groups as defined in Table 3-1 below.

**Table 3-1**
**Analytical Groups Included in Phase I Evaluation Process**

| Analytical Group | Sampling Methods Implemented | | | Analytical Group Included in Phase I Evaluation Process? |
|---|---|---|---|---|
| | HSM | LSM | Whole Water | |
| PCDDs/PCDFs | x | x | x | Yes |
| PCB Congeners | x | x | x | Yes |
| Aroclor PCBs | x | x | x | Yes |
| Organochlorine Pesticides | x | x | x | Yes |
| SVOCs | x | x | x | Yes |
| SVOC SIM | x | x | x | Yes |
| Chlorinated Herbicides | x | x | x | Yes |
| Cyanide | x | - | x | Yes |
| VOCs | x | - | x | Yes |
| TEPH | x | - | x | Yes |
| TSS | x | x | x | No |
| TDS | x | x | x | No |
| TOC | x | - | x | No |
| POC | - | x | - | No |
| DOC | x | x | - | No |
| Grain Size | - | - | x | No |
| Metals | - | - | x | No |
| Mercury | - | - | x | No |
| Methyl mercury | - | - | x | No |

**Notes:**
x = analytical sampling method was performed
- = analytical sampling method was not performed

The Phase I evaluation process was carried out according to the approach specified in Worksheet #17 of the QAPP (Tierra 2013). The evaluation process consisted of the following four sequential steps:

- *Step 1 – Implementability:* Implementability was defined as successful collection and processing of samples for laboratory analysis meeting minimum requirements as listed in Worksheets #19-1 through #19-4 of the QAPP.

- *Step 2 – Data Quality:* Data quality was determined based upon the outcome of the data validation task (outlined in Worksheet #36 and included as Appendix C of the QAPP). Data flagged "R" were rejected based upon the project-defined validation procedures and were not considered to be usable. Datasets for a particular analytical group containing a minimum of 90% usable data were further evaluated.

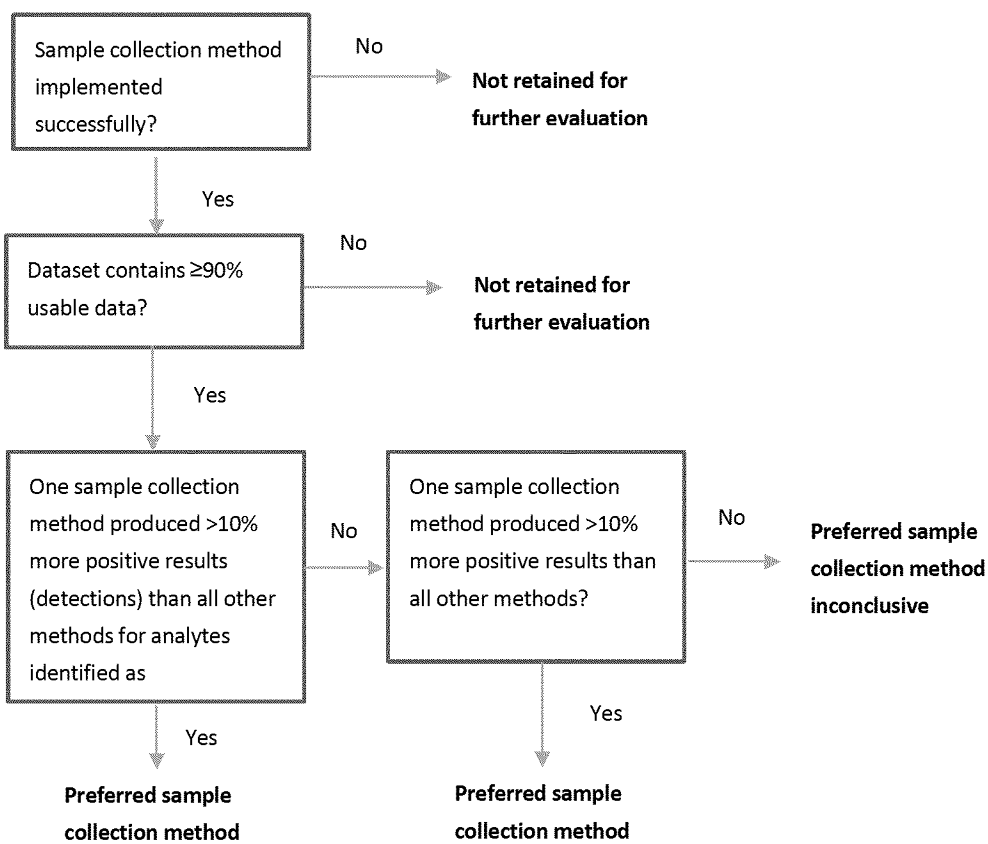
- *Step 3 – Frequency of Detections of COPCs/COPECs:* If, for a given analytical group, one sample collection method produced greater than 10% more positive results (detections) than all other methods for analytes identified as COPCs, then that sample collection method was identified as the preferred sample collection method for that particular analytical group.

- *Step 4 – Frequency of Detections of All Analytes:* If, for a given analytical group, one sample collection method produced greater than 10% more positive results (detections) than all other methods, then that sample collection method was identified as the preferred sample collection method, for that particular analytical group. Note, Step 4 of the evaluation process was completed only in cases where a preferred sample collection method could not be determined based on Step 3.

If for a given analytical group, no sample collection method produced greater than 10% more positive results (detections) than all other methods, then the preferred sample collection method for that analytical group was identified as inconclusive.

The evaluation process is represented below.

**Figure 3-1: Phase I Evaluation Process Flow Chart**




**Notes:**
1. Steps 1 and 2 were carried out individually for each analytical group, for each sampling method, and for each sampling event and attempt.
2. If for a given analytical group, no sample collection method produced greater than 10% more positive results (detections) than all other methods, then the preferred sample collection method for that analytical group was identified as inconclusive.

Section 4 describes the results of the evaluation process with respect to implementability (Step 1). The results of the evaluation process with respect to analytical data evaluation (Steps 2 to 4) are described in Section 5. Results are documented on the comparison charts outlined in Worksheet #11 of the QAPP (Tierra 2013) (included as Appendices A to J) and referenced in the applicable sections(s) of this Phase I Report.

# 4. Implementation Evaluation

As discussed in Section 3, the first step in the evaluation process is an assessment of implementability. Implementability is defined as the degree to which each sample collection method was successful in collecting the required samples for laboratory analysis and meeting the minimum analytical SOP requirements as defined in the QAPP (Worksheets #19-1 through 19-4; Tierra 2013). For any given sampling attempt, if a sample collection method was not successful in collecting samples for laboratory analyses, it would not be considered for further evaluation and was not included in the comparison of sample collection methods for that analytical group(s).

The following sections discuss implementation challenges common to all sample collection methods for consideration during the ultimate selection of sample collection method(s). A comparison of the sampling approaches with respect to implementation challenges encountered and ability to successfully generate target mass/volume for laboratory analysis is presented below.

## 4.1 Implementation Requirements and Challenges

Mobilization requirements were common for all sample types. Specific mobilization requirements and challenges addressed during the sample collection activities included the following:

- Site access and sidewalk closure and occupancy permit
- Coordination with Newark Police
- Weather monitoring
- Coordination with PVSC
- Storm duration.

A sidewalk closure and occupancy permit was obtained from the City of Newark to access and stage the sample collection system at the Clay Street CSO. Such permit would be required for any sampling approach utilized in Phase II. The permit application was initially prepared and approved prior to the first sample collection event and renewed every 30 days during the Phase I sampling program. Therefore, the permit was in place at all times during the potential sample collection period. Typically, the City of Newark does not issue permit renewals and requires submitting a new permit application. However, because the sample collection task is rainfall dependent, the City of Newark agreed to issue permit renewals every 30 days. Sampling location within differenttownships may be subject to different requirements.

Tierra coordinated with the City of Newark police during sample collection to provide traffic/site safety control in accordance with New Jersey Department of Transportation regulations. The Clay Street CSO sampling location is located at the intersection of Clay Street and McCarter Highway in Newark, New Jersey. Due to heavy traffic and the need to occupy the sidewalk, police support was required to provide traffic control. Additionally, site safety was needed to facilitate collection of bulk samples during nights and weekends.

Weather monitoring was performed during Phase I sample collection to determine an appropriate time to initiate mobilization for sample collection. The QAPP (Tierra 2013) states the following criterion for mobilization: "For a precipitation event to trigger mobilization for sample collection, the event must be anticipated to produce at least 0.2 inch of rain with an average intensity of at least 0.05 inch per hour with no more than 4 consecutive dry hours during the event." Based on the target storm duration of four to six hours for sample collection, the length of the rainfall period expected to meet the mobilization criteria was also considered. A four to six hour sample collection period was targeted as this was the length of time anticipated to be needed to collect enough solids within the CFC to obtain all samples based on the limited existing TSS data for CSO effluent. Tierra screened various weather forecast providers to select a precipitation forecast provider to predict storm events to prepare and quickly respond to potential storm events for sample collection. Given the capabilities of the weather services evaluated, The Weather Channel and Weather Underground were used for general, long-term (7- to 10-day) weather monitoring, while the National Oceanic and Atmospheric Administration's National Weather Service (NOAA's NWS) was used for more precise monitoring (6- and 3-day forecasts) to evaluate the potential precipitation on an hourly basis. The NOAA's NWS station located at the Newark Liberty International Airport, New Jersey was identified as the location closest to the CSO location for the Phase I CSO/SWO sampling program. During periods of anticipated sample collection, monitoring of the forecast weather from the three providers was reviewed on a daily basis. Tierra monitored the forecast daily and whether there were events within 10, 7, 6, or 3 days with the potential to trigger mobilization for sample collection. Tierra then notified other members of the project team if an event was identified to trigger mobilization.

Following the initiation of Phase I sample collection, based on a comparison of actual (hourly precipitation data in inches available through NOAA's NWS) and predicted precipitation data and overflows recorded at the Clay Street CSO for various storm events, the mobilization criterion was modified from an average rainfall intensity of at least 0.05 inch per hour to an average intensity of at least 0.03 inch per hour. It was identified that several overflow events were missed due to the 0.05 inch per hour average rainfall intensity mobilization criterion, and that an average intensity of 0.03 inch per hour resulted in sufficient overflow conditions at the Clay Street CSO. Therefore, the mobilization criterion was changed to 0.03 inch per hour for rainfall intensity. The mobilization criterion for total rainfall remained the same (0.2 inch of rain).

Although the modification to the mobilization criteria resulted in mitigating missed overflows, sample collection could not be completed during six mobilization events due to other factors, including the following:

- No rainfall or less than anticipated rainfall, contrary to forecasted conditions
- No overflow occurrence during rain events that met the mobilization criteria

- Overflow lasted for less than the target duration of 4 to 6 hours, resulting in no sample collection
- Water level in the diversion chamber manhole was low (approximately1 feet from the bottom), limiting the ability of the intake tubing to pump effluent and remain 1 foot off the bottom as required by the QAPP (Tierra 2013)
- An operational issue with the CFC.

During anticipated storm events, Tierra coordinated with PVSC regarding the timing of regulator gate valve openings at the sampling location. During a storm event, as soon as the regulator gate valve was opened at the Clay Street CSO, PVSC contacted Tierra to notify them of the gate opening and overflow conditions at the Clay Street CSO. Sample collection was initiated following PVSC confirmation regarding gate opening. Following the storm event, PVSC contacted Tierra with notification that the regulator gate valve was closed at the Clay Street CSO, indicating the end of overflow conditions. PVSC had informed Tierra that overflows can occur without the regulator gate being opened. During one mobilization event on October 7, 2013, the sampling crew observed overflow at the Clay Street CSO location and bulk sample collection was initiated, although Tierra did not receive notification that the regulator gate valve had been opened (and, therefore, presumably was not).

### 4.2 Evaluation of Sampling Methods

The following subsections discuss the challenges associated with each of the sampling methods (HSM, LSM, whole water, and grab metals) and the measures taken to address such challenges. The systematic evaluation of these methods is governed by the implementability of the sampling methods and the ability to generate target sample mass/volume to accommodate the full suite of target analytes.

#### 4.2.1 High-Solids Mass

##### *4.2.1.1 High-Solids Mass Particulate*

As described in Section 2, HSM particulate samples were generated from the solids retained in the CFC bowl, and the samples were processed and shipped to analytical laboratories the day after bulk sample collection.

*Implementation Challenges and Logistics*

Minor challenges were encountered during sample collection, and modifications were implemented to address these challenges.

The CFC setup is more labor intensive as compared to the other sample collection methods (whole water and LSM). The CFC sampling equipment has moving parts and thus the potential for breakdown. To address the labor requirements and the complexity of operating the system, prior to the start of Phase I sample collection, an adequate number of personnel were trained to setup and operate the centrifuge and were required to be familiar with the SOPs and manufacturers' specifications of the multiple systems in the sample collection trailer. As part of the CSO/SWO investigation, a field demonstration and testing of the sample collection system was conducted on August 24, 2012 at the Ivy Street CSO outfall located in Kearny, New Jersey.

During all sampling attempts at the Clay Street CSO, two material types ("fines" and "non-fine paper-like material") were encountered in the CFC bowl during HSM particulate sample collection. The challenge was to create a homogeneous particulate sample for laboratory analyses. A modification to the SOP was implemented and a stainless steel blender was used to process and blend the fines and non-fines material to create a homogenous particulate sample for laboratory analysis. SOP No. 4 – Sample Processing and Collection (Tierra 2013) provides additional details on the blending process. The HSM particulate placed into sample containers by the field team during the first attempt of the first event consisted of only the fines portion of the HSM particulate material. Because this sample was not homogenized with the non-fines portion of the particulate, as was the case during all subsequent sampling attempts and events, data from this first sampling attempt was not considered useable for purposes of the Phase I evaluation and were not considered further and are not included in this Phase I Report. PCDDs/PCDFs and PCB congener sample results for Event #1, Attempt #1 are included in Appendix A and B, respectively.

During pre-Phase I blank collection and decontamination activities, it was observed that small particulates remained in the CFC following prescribed decontamination procedures and caused potential issues with CFC operation. It was decided to add a decontamination step to power wash the CFC bowl to remove the residual particulates. The power-washing step adds more time to the decontamination process, but avoids potential operational issues with the CFC.

A significantly fewer number of sample containers were required to ship the HSM particulate samples (primary and contingency) compared to the LSM and whole water sample collection methods and, therefore, resulted in lower actual bottle breakage during shipping and required less time for sample packaging and shipment.

*Ability to Generate Target Sample Mass/Volume*

The HSM sample collection method generated sufficient solids mass required for the targeted sample analyses. A minimum of two sampling attempts was needed to generate the targeted solids mass (2,400 grams; including QA/QC samples and primary and contingency samples) during each sampling event. During a single sampling attempt (6-hour sample collection), sufficient solids mass (approximately 1,550 grams) was generated to collect primary samples (including QA/QC) to accommodate the full targeted analytical groups (1,130 grams). An additional sampling attempt was needed to accommodate contingency sample mass for laboratory analysis. Note that this observation is based on one sampling location (Clay Street CSO) and solids mass retained in the CFC will vary at different CSO locations as it is dependent on the influent TSS.

*Contingency Mass/Volume*

No contingency samples were used in the HSM particulate sample collection method (see Appendix C).

*4.2.1.2 High-Solids Mass Dissolved*

As described in Section 2, the HSM dissolved samples were generated by subsampling from the HSM dissolved bulk sample collection tank using a small-diameter peristaltic pump and dedicated Teflon® tubing, and the samples were processed and shipped to analytical laboratories the day after bulk sample collection

*Implementation Challenges and Logistics*

The challenges identified above for HSM particulate sampling wi th regards to operation and decontamination of the CFC apply to the HSM dissolved sampling.

A secondary tank was needed around the HSM bulk sample collection tank to facilitate the placement of ice which was used to immediately begin to chill, and to then maintain, the cool temperature of the HSM dissolved bulk sample.

Due to the high sample volume required for each analytical group, larger (than typically used for standard aqueous analytical methods) sample containers were required to ship HSM dissolved samples compared to the HSM particulate sampling method and, therefore, resulted in bottle breakage during shipping and required more time for sample processing and shipment. However, approximately the same number of sample containers were needed to collect the HSM dissolved samples as the LSM bulk and whole water samples. Additional sample packaging steps (e.g., bubble wrap, pre-cut foam inserts) were undertaken to mitigate bottle breakage during sample shipment.

*Ability to Generate Target Sample Mass/Volume*

One successful six-hour sampling attempt/event was needed to generate the target sample volume (approximately 230 liters; including QA/QC samples and primary and contingency samples) to accommodate the full target analytical groups. However, as noted in Section 2, only a portion of the effluent stream from the CFC was diverted to the HSM bulk sample collection tank. The rate at which the effluent was pumped from the CFC effluent stream into the HSM bulk sample collection tank could potentially be modified to collect the required volume for HSM dissolved samples within a shorter time period.

*Contingency Mass/Volume*

HSM dissolved contingency volumes utilized are described below and are outlined in Appendix C.

- *Event #1, Attempt #1 HSM dissolved*: Two contingency bottles were utilized for PCB congener analyses due to breakage of primary sample containers observed upon laboratory receipt.

### 4.2.2 Low-Solids Mass

#### *4.2.2.1 Low-Solids Mass Bulk Sample Collection*

Similar to HSM dissolved samples, LSM bulk samples were generated for laboratory analyses by subsampling from the whole water/LSM bulk sample collection tank using a small-diameter peristaltic pump and dedicated Teflon® tubing, and the samples were processed and shipped to analytical laboratories the day after bulk sample collection. The laboratory completed filtration of the LSM bulk sample to generate LSM particulate and LSM dissolved samples.

*Implementation Challenges and Logistics*

The challenges identified above for HSM dissolved sampling (i.e., need for a secondary tank and large sample volumes/containers) apply to the LSM bulk sampling.

LSM bulk sample collection is similar to HSM dissolved sample collection, except the LSM bulk sample is collected prior to the CFC. As such, LSM bulk sample collection setup is generally less labor intensive compared to the HSM sample collection method.

As discussed in Section 2, the LSM/whole water bulk sample collection tank was double-lined with a Teflon® liner. During sample processing activities on December 9, 2013, a tear/rip was observed at the bottom of the inside Teflon® liner of the double-lined LSM bulk/whole water bulk sample collection tank after mixing and subsampling activities began. Water was collected from within the inner liner of the double-lined tank, and excess water remained in the tank at the end of sampling. It was not necessary to collect water from between the two Teflon® liners. The potential for liner tear/rip was identified during design of the sample collection system, and the bulk sample collection tanks were double-lined with Teflon® liners to avoid potential for bulk effluent to leak from the Teflon® liner and contact the tank. As such, no negative impacts to the sample were identified due to the identified tear/rip.

*Ability to Generate Target Sample Mass/Volume*

One successful 6-hour sampling attempt/event was needed to generate the target sample volume (approximately 450 liters, including QA/QC samples and primary and contingency samples) to accommodate the full target analytical groups. However, as noted in Section 2, only a portion of the effluent stream from the manhole was diverted to the LSM bulk sample collection tank. The rate at which the effluent was pumped from the effluent stream into the LSM bulk sample collection tank could potentially be modified to collect the required volume for LSM bulk samples within a shorter time period.

*4.2.2.2 Low-Solids Mass Bulk Laboratory Filtration*

As described in Section 2, LSM bulk samples were generated by filtration at the laboratory.

*Implementation Challenges and Logistics*

The laboratory successfully filtered all of the LSM bulk samples using the primary approach. Although filtration of LSM bulk samples was relatively time consuming (as described below), the use of the secondary approach was not necessary.

The LSM bulk sample separation procedure is labor intensive due to the preparatory decontamination and setup requirements of the multi-component equipment. The LSM bulk sample separation equipment (for both the primary and secondary approach), comprise multiple components, including various tubing and filter media housing. These component parts require rigorous decontamination, and associated blank collection, between uses in separating LSM bulk material obtained from different sampling events. Additionally, the filter media used to separate the LSM bulk samples is pre-cleaned in lots prior to use to verify that filters are not contributing any contamination to the LSM samples during bulk sample filtration. A representative filter from the lot is selected and submitted for laboratory analysis. Results of the analyses are used to certify that the filter media are contaminant-free or to establish background contaminant concentrations in the filter media as applicable. Pre-cleaned filter media must be re-certified to re-establish contaminant background concentration if not used to separate samples over a period greater than 6 months from the initial evaluation.

The LSM bulk sample separation procedure is time consuming as it requires the filtration of large volumes of LSM bulk sample to meet the analytical sensitivity requirements established in the QAPP (Tierra 2013). Table 4-1 below identifies the volume requirements for each analytical group.

**Table 4-1**
**LSM Bulk Liquid Volume Requirements by Analytical Group**

| Analytical Group | Minimum Sample Volume Required (liters) | Actual Sample Volume Collected per Event (liters) |
|---|---|---|
| PCDD/PCDFs | 40 | 40 |
| PCB Congeners | 20 | 20 |
| Organochlorine Pesticides | 10 | 10 |
| SVOCs | 10 | 10 |
| SVOC SIM | 10 | 10 |
| Aroclor PCBs | 4 | 4 |
| Chlorinated Herbicides | 4 | 4 |
| POC/DOC | 16 | 16 |
| TSS | 3 | 3 |
| TDS | 1.5 | 1.5 |

Minimum sample volume requirements listed above are per event and include the primary sample, field duplicate, and associated QA/QC samples. During Phase I, approximately 120 liters of LSM bulk sample were collected and processed during each event requiring approximately 48 labor hours. This volume/time does not take into consideration contingency volume that might be needed.

*Ability to Generate Target Sample Mass/Volume*

The LSM bulk sample filtration process did generate acceptable target sample volume for LSM dissolved samples. However, the LSM bulk sample filtration process was insufficient in generating the target sample mass for LSM particulate samples. Table 4-2 provides the targeted and corresponding actual LSM bulk sample volume filtered to produce the LSM dissolved samples. Table 4-3 provides the targeted sample mass for LSM particulate samples for each analytical group per event, as well as the corresponding actual mass of LSM particulate samples collected and analyzed by the laboratory during Phase I.

**Table 4-2**
**Targeted LSM Dissolved Volume and Corresponding Actual LSM Bulk Volume Filtered by Analytical Group**

| Analytical Group | Targeted LSM Dissolved Sample Volume (liters)[a] | Event #1, Attempt #1 LSM Bulk Volume Filtered (liters)[b,c] | Event #1, Attempt #2 LSM Bulk Volume Filtered (liters)[b] | Event #1, Attempt #3 LSM Bulk Volume Filtered (liters)[b] | Event #2, Attempt #2 LSM Bulk Volume Filtered (liters)[b,d] |
|---|---|---|---|---|---|
| PCDD/PCDFs | 10 | 10.035 | - | 9.663 | 9.476 |
| PCB Congeners | 5 | 4.957 | - | 5.009 | 4.819 |
| Organochlorine Pesticides | 2.5 | - | 2.558 | - | 2.430 |
| SVOCs | 2.5 | - | 2.363 | - | 2.418 |
| SVOC SIM | 2.5 | - | 2.530 | - | 2.400 |
| Aroclor PCBs | 1 | - | 0.979 | - | 1.013 |
| Chlorinated Herbicides | 1 | - | 0.984 | 1.053 | 1.042 |
| POC/DOC | 4 | - | 4.057 | - | 4.147 |

**Notes:**
a. Target volume is for sample only and does not include QC volume requirements.
b. LSM bulk filtered volume presented are that of the original field sample only (without additional QC volume requirements) allowing direct comparison with the target volume value provided for each analytical.
c. As a result of only the "fine" material being analyzed for Event #1, Attempt #1, PCDDs/PCDFs and PCB congener samples from Event #1, Attempt #1 were "replaced" by Event #1, Attempt #3. Therefore, Event #1, Attempt #1 results were not included as part of the data evaluation process.
d. No LSM samples were collected during Event #2, Attempt #1.
- = analytical group was not analyzed

**Table 4-3**
**Targeted LSM Particulate Mass and Corresponding Actual LSM Particulate Mass by Analytical Group**

| Analytical Group | Targeted LSM Particulate Mass (grams)[a] | Event #1, Attempt 1 LSM Particulate Mass (grams)[b] | Event #1, Attempt #2 LSM Particulate Mass (grams)[b] | Event #2, Attempt #2 LSM Particulate Mass (grams)[b] | Event #1, Attempt #3 LSM Particulate Mass (grams)[b] |
|---|---|---|---|---|---|
| PCDD/PCDFs | 1.5 | 0.370[c] | - | 0.079 | 0.077 |
| PCB Congeners | 0.75 | 0.183[c] | - | 0.040 | 0.040 |
| Organochlorine Pesticides | 0.375 | - | 0.166 | 0.020 | - |
| SVOCs | 0.375 | - | 0.163 | 0.020 | - |
| SVOC SIM | 0.375 | - | 0.160 | 0.020 | - |
| Aroclor PCBs | 0.15 | - | 0.068 | 0.008 | - |
| Chlorinated Herbicides | 0.15 | - | 0.064 | 0.009 | 0.008 |
| POC | 0.60 | - | 0.263 | 0.010 | - |

**Notes:**
a. Target sample mass was based on a historical TSS average of 150 milligrams per liter (mg/L). These values reflect the minimum sample mass set as a requirement for a single sample analysis and do not include additional QC mass requirements.
b. LSM particulate mass values observed during the field investigation are that of the original field sample only (without additional QC mass requirements) allowing direct comparison with the target mass value provided. LSM particulate samples were not collected during Event # 2, Attempt # 1.

c. As a result of only the "fine" material being analyzed for Event #1, Attempt #1, PCDDs/PCDFs and PCB congener samples from Event #1, Attempt #1 were "replaced" by Event #1, Attempt #3. Therefore, Event #1, Attempt #1 results were not included as part of the data evaluation process.

- = analytical group was not analyzed

The low mass obtained for the LSM particulate samples is related to significantly lower (as low as 8 mg/L) than anticipated (150 mg/L) TSS concentrations observed during the sampling events/attempts at the Clay Street CSO. Reduced sample mass has a direct relationship with reduced analytical sensitivity; however, the LSM sample results were retained for further evaluation as part of the Phase I evaluation process. The smaller than anticipated sample size obtained for LSM particulates may be linked to the larger number of non-detected results observed for many of the constituents of concern (COCs) as a direct cause and effect. This is especially true for the hydrophobic constituents, which are associated in large part with the particulate, rather than the dissolved-phase of the CSO overflow. This is a limitation of the LSM sample collection method. Even if the anticipated LSM particulate sample size had been collected, the mass of particulates obtained would have been approximately 10 to 100 times less than the HSM particulate sample mass. Therefore, it is unclear if the targeted LSM particulate sample size would have produced a greater number of positive results for COCs when compared to the HSM particulate samples.

To account for potential low TSS and corresponding low LSM particulate sample mass during future sampling events, the possible addition of real-time TSS monitoring using a turbidimeter or similar equipment will be evaluated to make field adjustments for the volume of water that needs to be collected for LSM bulk samples.

*Contingency Mass/Volume*

No contingency sample masses or volumes were used in the LSM sample collection method (see Appendix C).

#### 4.2.3 Whole Water

As described in Section 2, whole water samples were generated for laboratory analyses by subsampling from the LSM/whole water bulk sample collection tank using a small-diameter peristaltic pump and dedicated Teflon® tubing, and the samples were processed and shipped to analytical laboratories the day after bulk sample collection.

The whole water sampling method is identical to the LSM bulk sampling method, with the only difference being there is no laboratory filtration to generate particulate and dissolved samples.

*Contingency Mass/Volume*

Whole water contingency volumes utilized are described below and are outlined in Appendix C to this Phase I Report.

- *Event #1, Attempt #1 Whole Water*: Thirty-three contingency bottles were utilized for PCDD/PCDFs and PCB congener analyses due to breakage in the primary sample upon laboratory receipt and several coolers being out of temperature range. Further, in the case of PCDD/PCDFs analysis, the sample, matrix spike, and matrix spike duplicate were re-extracted using contingency volume after solid-phase extraction disc clogging problems occurred during the original extraction.

- *Event #2, Attempt #2 Whole Water*: Four contingency bottles were utilized for organochlorine pesticide analysis of the primary sample and duplicate sample due to the delayed sample arrival of the primary samples to the laboratory. The laboratory was instructed to only use contingency volumes for the entire analysis (i.e., primary sample, duplicate, matrix spike, and matrix spike duplicate).

  Sixteen contingency bottles were utilized for PCDD/PCDFs analysis due to the delayed sample arrival of the primary and duplicate samples to the laboratory. The laboratory was instructed to only use contingency volumes for all analyses (i.e., primary sample, duplicate, matrix spike, and matrix spike duplicate).

  Eight contingency bottles were utilized for PCB congener analysis due to the delayed sample arrival of the primary and duplicate samples to the laboratory. The laboratory was instructed to only use contingency volumes for all analyses (i.e., primary sample, duplicate, matrix spike, and matrix spike duplicate).

- *Event #1, Attempt #3 Whole Water*: Four contingency bottles were utilized for PCDD/PCDFs analysis due to breakage of one of the four primary bottles for the primary sample. The laboratory was instructed to only use the contingency volumes for the sample analysis.

#### 4.2.4 Grab Metals

As described in Section 2, samples for grab metals, including mercury and methyl mercury analyses, were collected directly from the effluent stream into sample containers and shipped within 24 hours (to meet holding time requirements) to the analytical laboratory for analysis.

*Implementation Challenges and Logistics*

No significant challenges were encountered during implementation of grab metals sampling. However, with regards to ease of implementation, adequate lead time (approximately 2 to 3 weeks) is required for the laboratory to decontaminate tubing and sample containers in accordance with the trace metals sampling protocol (USEPA 1996). Additionally, CH and DH sampling procedures needed to be implemented in accordance with SOP No. 5 – Metals Sampling via Method 1669 Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels (USEPA 1996) (Tierra 2013). The CH and DH procedures require additional preparation and implementation time in the field. The samples for metals (total and dissolved) were not preserved in the field. To meet the analytical method holding time requirements, metals samples were processed and shipped via overnight carrier within 24 hours of sample collection.

*Ability to Generate Target Sample Mass/Volume*

The sampling method was able to generate the target sample volume during each sampling event for the full target analytical groups.

*Contingency Mass/Volume*

No contingency volumes were used in the grab metals collection (see Appendix C).

#### 4.3 Summary of Implementability Evaluation

In summary, with the exception of the samples collected during Event #1, Attempt #1 (see Section 4.2.1.1), all three sampling approaches (HSM, LSM, and whole water) were successful in collecting the required field samples for laboratory analyses for all analytical groups during the sampling events/attempts at the Clay Street CSO. Therefore, all samples collected met the evaluation criteria based on implementability and were retained for further evaluation. However, as noted in Section 2, multiple attempts were needed to incrementally (following the analytical hierarchy established in the QAPP) complete the overall sample volume requirements and the LSM particulate samples did not meet the targeted sample mass.

# 5. Analytical Data Evaluation

This section presents the results of Steps 2, 3, and 4 of the Phase I data evaluation process.

## 5.1 Data Usability

The second step of the evaluation process is an evaluation of the quality of the data generated. As stated above, validated data must contain a minimum of 90% usable data to be further assessed in the evaluation process. Table 5-1 below contains a summary of data that did not meet this criterion and, therefore, was not considered further in the evaluation process. Each is discussed in further detail below.

**Table 5-1**
**Summary of Data Quality Failures**

| Sample Collection Method and Analytical Group | Event/ Attempt | Primary/ Duplicate Sample | Total Number of Results Reported | Number of Results Affected | % of Results Affected |
|---|---|---|---|---|---|
| HSM Particulate – Organochlorine Pesticides | Event #1, Attempt #2 | primary | 28 | 4 | 14 |
| LSM Particulate – SVOCs | Event #1, Attempt #2 | primary | 50 | 9 | 18 |
| HSM Dissolved – SVOCs | Event #1, Attempt #2 | primary | 50 | 8 | 16 |
| HSM Dissolved – SVOCs | Event #1, Attempt #2 | duplicate | 50 | 8 | 16 |
| HSM Particulate – VOCs | Event #1, Attempt #2 | primary (fines) | 6 | 4 | 67 |
| HSM Particulate – VOCs | Event #1, Attempt #2 | primary (non-fines) | 6 | 4 | 67 |
| HSM Particulate – VOCs | Event #1, Attempt #2 | duplicate (fines) | 6 | 4 | 67 |
| HSM Particulate – VOCs | Event #2, Attempt #1 | primary (fines) | 6 | 4 | 67 |
| HSM Particulate – VOCs | Event #2, Attempt #1 | primary (non-fines) | 6 | 5 | 83 |
| HSM Particulate – VOCs | Event #2, Attempt #1 | duplicate (fines) | 6 | 4 | 67 |

- *HSM Particulate – Organochlorine Pesticides*: Four results in the Event #1, Attempt #2 primary sample were rejected due to labeled analog recovery failure.

- *LSM Particulate – SVOCs*: Nine results in the Event #1, Attempt #2 primary sample were rejected due to extremely poor (defined as recovery that is too low to be qualified as an estimate; therefore, the data must be rejected) internal standard response.

- *HSM Dissolved – SVOCs*: Sixteen results in the Event #1, Attempt #2 primary and duplicate samples were rejected due to extremely poor (defined as recovery that is too low to be qualified as an estimate; therefore, the data must be rejected) internal standard response.

- *HSM Particulate – VOCs*: Twenty-five results in the Event #1, Attempt #2 and Event #2, Attempt #1 primary (fines), primary (non-fines), and duplicate (fines) samples were rejected due to low internal standard responses.

Note that these data quality issues were related to laboratory performance and are not likely sample collection technique dependent.

All other data for each sampling method and analytical group met the usability requirements set out in the QAPP (Tierra 2013) and were considered further in the evaluation process.

### 5.2 Decontamination

As discussed in Section 2.4, applicable decontamination procedures were applied throughout the Phase I sample collection program in accordance with SOP No. 6 – Decontamination (Tierra 2013). Between sampling events, a full decontamination of the sample collection system was performed in accordance with Section 2.2.2 of SOP No. 6: Decontamination, included in the QAPP (Tierra 2013). Field, rinsate and equipment blanks were collected in accordance with Section 2.4 of SOP No. 6: Decontamination. Positive results identified in the field, rinsate, and equipment blanks collected during Phase I, and associated field blank implications on the data evaluation process are described in Section 5.3.

### 5.3 Field Blank Results and Affected Sample Results

During the data validation process, positive sample results associated with analytes identified in a field blank were assessed per USEPA Region 2 and other data validation guidance provided in the approved QAPP (Tierra 2013). Positive sample results that fell within the affected concentration range as defined in the validation guidance, were qualified “U”, not detected. The number of positive sample results qualified as “U” based on field blank contamination overall are included in Appendix D.

Tierra assessed the potential impact of field blank concentrations on the conclusions of the recommended sample collection method. The details of this assessment are included in Appendix E. The following assumption was made in order to assess the potential impact of field blank concentrations. For the purpose of this evaluation, all detected results as reported by the laboratory prior to validation, are assumed to be those of compounds present in the field sample collected, and not artifacts of background concentrations.

Field blank concentrations were found to have an impact on the recommended sample collection method for the following analytical groups:

- PCB Congeners - Event #2, Attempt #2 (primary sample)

- Organochlorine Pesticides - Event #1, Attempt #2 (duplicate sample) and Event #2, Attempt #2 (primary sample)

- SVOCs SIM - Event #1, Attempt #2 (primary sample) and Event #1, Attempt #2 (duplicate sample)

- Chlorinated Herbicides - Event #2, Attempt #2 (primary sample), Event #2, Attempt #2 (duplicate sample), Event #1, Attempt #3 (primary sample), and Event #1, Attempt #3 (duplicate sample).

### 5.4 Steps 3 and 4: Frequency of Detections

Data for a given analytical group and sampling method that were not eliminated from the evaluation process during Steps 1 or 2 were assessed in Steps 3 and 4 based on frequency of detections as defined above. A summary of the Steps 3 and 4 evaluations per analytical group are summarized below. In addition, a summary of the overall result of the evaluation process is also provided. As discussed in Section 4, the HSM particulate placed into sample containers by the field team during the first attempt of the first event consisted of only the fines portion of the HSM particulate material. Because this sample was not homogenized with the non-fines portion of the particulate, as was the case during all subsequent sampling attempts and events, data from this first sampling attempt was not considered useable for purposes of the Phase I data evaluation.

#### 5.4.1 Polychlorinated Dibenzo-p-dioxins/Polychlorinated Dibenzofurans

All three sample collection and processing methods (LSM, HSM, and whole water) were evaluated for the PCDD/PCDFs analytical group. Samples (primary sample and field duplicate) were collected for PCDD/PCDF analysis during Event #1, Attempt #3 and Event #2, Attempt #2. A summary of the findings of the evaluation Steps 3 and 4 for PCDD/PCDF data are provided below. Detailed evaluation sheets (Worksheet #11) can be found in Appendix F.

- Based on Event #1, Attempt #3 (duplicate samples only), LSM and HSM sample collection methods had greater than 10% more positive results for COPC/COPECs than the whole water sample collection method. Neither LSM nor HSM sample collection methods had greater than 10% more positive results for PCDDs/PCDFs overall. This was not observed in the results for the primary samples; no sample collection method resulted in greater than 10% more positive results for COPC/COPECs or PCDDs/PCDFs overall.

- Based on Event #2, Attempt #2 (primary and duplicate samples), the HSM sample collection method had greater than 10% more positive results for COPC/COPECs than the LSM and whole water sample collection methods.

Overall, the recommended sample collection method(s), if any, based on the results of the Phase I evaluation criteria (Steps 1 to 4) for PCDDs/PCDFs is summarized in Table 5-2 below.

**Table 5-2**
**Recommended Sample Collection Method – PCDDs/PCDFs**

| | Event #1, Attempt #3 | Event #2, Attempt #2 |
|---|---|---|
| **Primary Sample** | Inconclusive | HSM |
| **Duplicate Sample** | LSM/HSM | HSM |

### 5.4.2 Polychlorinated Biphenyl Congeners

All three sample collection and processing methods (LSM, HSM, and whole water) were evaluated for the PCB congeners analytical group. Samples were collected for PCB congener analysis during Event #1, Attempt #3 and Event #2, Attempt #2. A summary of the findings of evaluation Steps 3 and 4 for PCB congener data are provided below. The detailed evaluation sheets (Worksheet #11) can be found in Appendix G.

- Based on Event #1, Attempt #3 (duplicate samples), the HSM sample collection method had greater than 10% more positive results for COPC/COPECs than the LSM and whole water sample collection methods. The results for the primary sample showed both HSM and LSM sample collection methods had greater than 10% more positive results for COPC/COPECs than the whole water sample collection method; however, the HSM sample collection method also had greater than 10% more positive results for PCB congeners overall.

- Based on Event #2, Attempt #2 (primary samples), the HSM sample collection method had greater than 10% more positive results for COPC/COPECs than the LSM and whole water sample collection methods. The results for the duplicate samples showed both HSM and LSM sample collection methods had greater than 10% more positive results for COPC/COPECs than the whole water sample collection method; however, the HSM sample collection method also had greater than 10% more positive results for PCB congeners overall.

Overall, the recommended sample collection method(s), if any, based on the results of the Phase I evaluation criteria (Steps 1 to 4) for PCB congeners is summarized in Table 5-3 below.

**Table 5-3**
**Recommended Sample Collection Method – PCB Congeners**

| | Event #1, Attempt #3 | Event #2, Attempt #2 |
|---|---|---|
| **Primary Sample** | HSM | HSM |
| **Duplicate Sample** | HSM | HSM |

### 5.4.3 Aroclor Polychlorinated Biphenyls

All three sample collection and processing methods (LSM, HSM, and whole water) were evaluated for the Aroclor PCBs analytical group. Samples were collected for Aroclor PCB analysis during Event #1, Attempt #2 and Event #2, Attempt #2. A summary of the findings of evaluation Steps 3 and 4 for Aroclor PCB data are provided below. The detailed evaluation sheets (Worksheet #11) can be found in Appendix H.

- Based on Event #1, Attempt #2 (primary and duplicate samples), the HSM sample collection methods had greater than 10% more positive results for COPC/COPECs than the LSM and whole water sample collection methods.

- Based on Event #2, Attempt #2 (duplicate samples), the HSM sample collection method had greater than 10% more positive results for COPC/COPECs than the LSM and whole water sample collection methods. This was not observed in the results for the primary samples; no sample collection method resulted in greater than 10% more positive results for COPC/COPECs or Aroclor PCBs overall.

Overall, the recommended sample collection method(s), if any, based on the results of the Phase I evaluation criteria (Steps 1 to 4) for Aroclor PCBs is summarized in Table 5-4 below.

**Table 5-4**
**Recommended Sample Collection Method – Aroclor PCBs**

| | Event #1, Attempt #2 | Event #2, Attempt #2 |
|---|---|---|
| **Primary Sample** | HSM | Inconclusive |
| **Duplicate Sample** | HSM | HSM |

### 5.4.4 Organochlorine Pesticides

All three sample collection and processing methods (LSM, HSM, and whole water) were evaluated for the organochlorine pesticide analytical group. Samples were collected for organochlorine pesticides analysis during Event #1, Attempt #2 and Event #2, Attempt #2. A summary of the findings of evaluation Steps 3 and 4 for organochlorine pesticide data is provided below. The detailed evaluation sheets (Worksheet #11) can be found in Appendix I.

- Based on Event #1, Attempt #2 (duplicate samples), the HSM sample collection method had greater than 10% more positive results for COPC/COPECs than the LSM and whole water sample collection methods. This was not observed in the results for the primary samples, no sample collection method resulted in greater than 10% more positive results for COPC/COPECs or organochlorine pesticides overall (note the HSM sample collection method for the primary sample was not considered, as the HSM particulate sample was rejected due to data usability issues).

- Based on Event #2, Attempt #2 (primary samples), the HSM sample collection method had greater than 10% more positive results for COPC/COPECs than the LSM and whole water sample collection methods. This was not observed in the results for the duplicate samples; no sample collection method resulted in greater than 10% more positive results for COPC/COPECs or organochlorine pesticides overall.

Overall, the recommended sample collection method(s), if any, based on the results of the Phase I evaluation criteria (Steps 1 to 4) for organochlorine pesticides is summarized in Table 5-5 below.

**Table 5-5**
**Recommended Sample Collection Method – Organochlorine Pesticides**

| | Event #1, Attempt #2 | Event #2, Attempt #2 |
|---|---|---|
| **Primary Sample** | Inconclusive | HSM |
| **Duplicate Sample** | HSM | Inconclusive |

5.4.5 Semivolatile Organic Compounds

All three sample collection and processing methods (LSM, HSM, and whole water) were evaluated for the SVOC analytical group. Samples were collected for SVOC analysis during Event #1, Attempt #2 and Event #2, Attempt #2. A summary of the findings of evaluation Steps 3 and 4 for SVOC data are provided below. Note there are no COPECs that are SVOCs. The detailed evaluation sheets (Worksheet #11) can be found in Appendix J.

- Based on Event #1, Attempt #2 (primary and duplicate samples), no sample collection method resulted in greater than 10% more positive results for SVOCs overall (note that three samples were rejected due to data usability issue).

- Based on Event #2, Attempt #2 (primary samples), the HSM sample collection method had greater than 10% more positive results for SVOCs overall than the LSM and whole water sample collection methods. This was not observed in the results for the duplicate samples; no sample collection method resulted in greater than 10% more positive results for SVOCs overall.

Overall, the recommended sample collection method(s), if any, based on the results of the Phase I evaluation criteria (Steps 1 to 4) for SVOCs is summarized in Table 5-6 below.

**Table 5-6**
**Recommended Sample Collection Method – SVOCs**

| | Event #1, Attempt #2 | Event #2, Attempt #2 |
|---|---|---|
| **Primary Sample** | Inconclusive | HSM |
| **Duplicate Sample** | Inconclusive | Inconclusive |

### 5.4.6 Semivolatile Organic Compounds Select Ion Monitoring

All three sample collection and processing methods (LSM, HSM, and whole water) were evaluated for the SVOC SIM analytical group. Samples were collected for SVOC SIM analysis during Event #1, Attempt #2 and Event #2, Attempt #2. A summary of the findings of evaluation Steps 3 and 4 for SVOC SIM data are provided below. The detailed evaluation sheets (Worksheet #11) can be found in Appendix K.

- Based on Event #1, Attempt #2 (primary and duplicate samples), the HSM sample collection method had greater than 10% more positive results for COPC/COPECs than the LSM and whole water sample collection methods. HSM sample collection method had greater than 10% more positive results for SVOC SIM overall.

- Based on Event #2, Attempt #2 (primary and duplicate samples), the HSM sample collection method had greater than 10% more positive results for COPC/COPECs than the whole water sample collection method but less than 10% more positive results for COPC/COPECs than the LSM sample collection method. Neither LSM nor HSM sample collection method had greater than 10% more positive results for SVOC SIM overall. These observations resulted in the LSM/HSM sample collection methods ranked as equivalent for the primary sample. This was not observed in the results for the duplicate sample. No sample collection method resulted in greater than 10% more positive results for COPC/COPECs or SVOCs SIM overall.

Overall, the recommended sample collection method(s), if any, based on the results of the Phase I evaluation criteria (Steps 1 to 4) for SVOCs SIM is summarized in Table 5-7 below.

**Table 5-7**
**Recommended Sample Collection Method – SVOCs SIM**

| | Event #1, Attempt #2 | Event #2, Attempt #2 |
|---|---|---|
| **Primary Sample** | HSM | LSM/HSM |
| **Duplicate Sample** | HSM | Inconclusive |

### 5.4.7 Chlorinated Herbicides

All three sample collection and processing methods (LSM, HSM, and whole water) were evaluated for the chlorinated herbicides analytical group. Samples were collected for chlorinated herbicide analysis during Event #1, Attempt #2; Event #1, Attempt #3; and Event #2, Attempt #2. Three sets of samples were collected due to a laboratory error identified during the herbicide analysis of the HSM particulate sample from Event #2, Attempt #2. The HSM particulate herbicide results indicated that a laboratory control sample associated with the herbicide data had failed. In an attempt to produce results that would be free of qualification, the laboratory was asked to re-extract and re-analyze the sample. The laboratory reported that the remaining HSM particulate sample had developed a mold growth on the surface of the sample. It was decided that the presence of this mold could pose data quality issues; therefore, it was suggested to the USEPA that additional chlorinated herbicide samples be collected during the next sampling event (Event #1, Attempt #3). This was approved by the USEPA in an email correspondence on February 20, 2014 (USEPA 2014). Data from all three sampling events/attempts, including herbicide results from Event #2, Attempt #2 affected by the failed laboratory control sample, have been used in this evaluation. A summary of the findings of evaluation Steps 3 and 4 for chlorinated herbicides data are provided below. Note there are no COPECs that are chlorinated herbicides. The detailed evaluation sheets (Worksheet #11) can be found in Appendix L.

It should be noted that many of the positive chlorinated herbicide results were qualified as tentatively identified at an estimated concentration (NJ). This is a reflection of a larger than acceptable level of uncertainty as to both the qualitative identification of the analyte and the numerical value reported. Across all sample types collected during the three sampling events/attempts, 29 positive chlorinated herbicide results were reported. Of those 29 positive results, 16 were assigned an “NJ” flag during validation. A significant component of the data evaluation process is a comparison of the number of positive results reported between sample collection methods (Steps 3 and 4). Therefore, the conclusions of the data evaluation process, and thereby the selection of a recommended sample collection method, may have been impacted by the larger than acceptable uncertainty in qualitative analyte identification noted during herbicide data validation.

- Based on Event #1, Attempt #2 (primary samples), the LSM sample collection method had greater than 10% more positive results for chlorinated herbicides overall than the HSM and whole water sample collection methods. For the duplicate samples, the LSM and HSM sample collection methods resulted in greater than 10% more positive results for chlorinated herbicides overall than the whole water sample collection method.

- Based on Event #1, Attempt #3 (primary samples), the HSM and whole water sample collection methods resulted in greater than 10% more positive results for chlorinated herbicides overall than the LSM sample collection method. For the duplicate samples, the LSM and whole water sample collection methods resulted in greater than 10% more positive results for chlorinated herbicides overall than the HSM sample collection method.

- Based on Event #2, Attempt #2 (primary samples), the HSM sample collection method resulted in greater than 10% more positive results for chlorinated herbicides overall than the LSM and whole water sample collection methods. For the duplicate samples, the LSM sample collection method resulted in greater than 10% more positive results for chlorinated herbicides overall than the HSM and whole water sample collection methods.

Overall, the recommended sample collection method(s), if any, based on the results of the Phase I evaluation criteria (Steps 1 to 4) for chlorinated herbicides is summarized in Table 5-8 below.

**Table 5-8**
**Recommended Sample Collection Method – Chlorinated Herbicides**

| | Event #1, Attempt #2 | Event #1, Attempt #3 | Event #2, Attempt #2 |
|---|---|---|---|
| **Primary Sample** | LSM | HSM/whole water | HSM |
| **Duplicate Sample** | LSM/HSM | LSM/whole water | LSM |

5.4.8 Cyanide

As per the QAPP (Tierra 2013), only HSM and whole water sample collection methods were evaluated for the cyanide analytical group since only whole water sample collection (and not LSM sample collection) were included in the CSO/SWO S&AP (USEPA 2008).

Samples were collected for cyanide analysis during Event #1, Attempt #2 and Event #2, Attempt #2. A summary of the findings of evaluation Steps 3 and 4 for cyanide data are provided below. Note cyanide is not a COPEC. The detailed evaluation sheets (Worksheet #11) can be found in Appendix M.

- Based on Event #1, Attempt #2 and Event #2, Attempt #2 (primary and duplicate samples), cyanide data exhibited positive results for the analyte in the samples collected using HSM and whole water sample collection methods. Because cyanide is a single-component analytical group with 100% detections for both methods, one sample collection method did not produce greater than 10% more positive results (detections) than all other methods. Therefore, the recommended sample collection method(s) based on the Phase I evaluation criteria is inconclusive.

5.4.9 Volatile Organic Compounds

As per the QAPP (Tierra 2013), only whole water and HSM sample collection and processing methods were evaluated for the VOC analytical group since only whole water sample collection (and not LSM sample collection) were included in the CSO/SWO S&AP (USEPA 2008). Samples were collected for VOC analysis during Event #1, Attempt #2 and Event #2, Attempt #1. However, samples collected using the HSM sample collection method were rejected due to data usability issues. Therefore, only data for samples collected via the whole water samples collection method were considered usable. The detailed evaluation sheets (Worksheet #11) can be found in Appendix N.

The whole water sample collection method was not selected as the recommended method for VOCs. A limited dataset was available to complete the data comparison between sampling approaches, and only data for samples collected via the whole water method were considered usable. Additional investigation is recommended during Phase II to evaluate sampling approaches for VOCs.

#### 5.4.10 Total Extractable Petroleum Hydrocarbons

As per the QAPP (Tierra 2013), only whole water and HSM sample collection and processing methods were evaluated for the TEPH analytical group since only whole water sample collection (and not LSM sample collection) were included in the CSO/SWO S&AP (USEPA 2008). Samples were collected for TEPH analysis during Event #1, Attempt #2 and Event #2, Attempt #2. A summary of the findings of evaluation Steps 3 and 4 for TEPH data are provided below. Note TEPH is not a COPEC. The detailed evaluation sheets (Worksheet #11) can be found in Appendix O.

- Based on Event #1, Attempt #2 and Event #2, Attempt #2 (primary and duplicate samples), TEPH data exhibited positive results for the analyte in the samples collected using both the HSM and whole water sample collection methods. Because TEPH is a single-component analytical group with 100% detections for both methods, one sample collection method did not produce greater than 10% more positive results (detections) than all other methods. Therefore, the recommended sample collection method(s) based on the Phase I evaluation criteria is inconclusive.

### 5.5 Impacts of Achieved Analytical Sensitivity

Sensitivity is related to the ability to compare analytical results with project quantitation limits (PQLs). Analytical detection limits should be at or below the PQLs to allow effective comparisons. All sample analytical results reported during Phase I of the CSO/SWO investigation were evaluated to determine if adequate sensitivity was achieved. The results for each analyte were cross-checked against the PQLs presented in Worksheet #15 of the QAPP (Tierra 2013). The results of this detailed evaluation are presented in the CSO/SWO Investigation Phase I Data Quality Usability Assessment Report (DQUAR; Tierra 2016). The DQUAR (Tierra 2016) is included as Appendix P.

The observation that data obtained for a particular sample type/collection method failed to meet established PQLs for specific analytical groups may have impacted the number of positive results identified in those samples, thereby potentially impacting the data evaluation process. Tierra performed an evaluation of instances where PQL exceedances were identified to assess any potential impact on the data evaluation process and sample collection method selection. The results of this additional evaluation is also included in the DQUAR (Tierra 2016).

The following table summarizes the conclusions following assessment of the potential impact of PQL exceedances for each sample collection method during the data evaluation and selection process.

**Table 5-9**
**Impact of PQL Exceedances**

| | PQL Exceedances May Have Impacted the Sample Collection Evaluation Process Yes/No | | | | |
|---|---|---|---|---|---|
| **Analytical Group** | **Whole Water** | **LSM Dissolved** | **LSM Particulate** | **HSM Dissolved** | **HSM Particulate** |
| PCDDs/PCDFs | No | NA | NA | NA | Yes |
| PCB Congeners | Yes | Yes | Yes | Yes | No |
| Organochlorine Pesticides | No | No | Yes | No | No |
| SVOCs SIM | No | Yes | Yes | NA | Yes |
| SVOCs | Yes | No | Yes | Yes | Yes |
| Aroclor PCBs | NA | NA | Yes | NA | No |
| Chlorinated Herbicides | NA | NA | Yes | Yes | NA |
| VOCs | NA | NA | NA | NA | No |

**Notes:**
NA= not applicable since non-detected results were not reported when or if PQL exceedances were noted for an analytical group.

### 5.6 Additional Data Evaluation

A side-by-side comparison of the HSM and LSM particulate and dissolved-phase concentrations and whole water was completed outside the scope of the data evaluation criteria as defined in the QAPP (Tierra 2013). Additionally based on comments received from the USEPA dated October 6, 2015 on this Phase I Report (Revision 0), and based on the results obtained for the Phase I sampling program, additional data evaluation was completed for select analytical groups to calculate summary statistics, compare results/concentrations, and evaluate trends to assist with development of the Phase II sampling program. Additional data evaluation was completed for the following analytical groups:

- PCDD/PCDFs
- PCB congeners

- Organochlorine pesticides
- SVOCs
- SVOCs SIM
- Aroclor PCBs
- Chlorinated herbicides
- VOCs
- Cyanide
- TEPH

Findings and results of the additional data evaluation is included in Attachment 1 - Phase I Report Addendum – Additional Data Evaluation.

## 6. Conclusion/Recommendation

Based on the Phase I evaluation process, the recommended sample collection methods per analytical group are identified below in Table 6-1. The HSM sample collection method is the preferred approach for certain hydrophobic contaminants, such as PCDDs/PCDFs, PCB congeners, Aroclor PCBs, and organochlorine pesticides. For PCB congeners, HSM was the recommended sample collection method for each sample collected (primary and duplicate) based on the Phase I evaluation process. For PCDDs/PCDFs, Aroclor PCBs, and organochlorine pesticides, HSM was the recommended sample collection method for half or more of the samples collected (primary and duplicate) based on the Phase I evaluation process. A preferred sample collection method for the remaining analytical groups was not definitive.

**Table 6-1**
**Phase I Sample Collection Method Recommendations**

| Sample Collection Technique | PCDD/ PCDF | PCB Congeners | Aroclor PCBs | Organochlorine Pesticides | SVOCs SIM | SVOC | Chlorinated Herbicides | Cyanide | VOC | TEPH |
|---|---|---|---|---|---|---|---|---|---|---|
| LSM | | | | | | | | | | |
| HSM | □ | □ | □ | □ | □ | O | O | O | O | O |
| Whole Water | | | | | | | | | | |

**Notes:**
□ □ = selected sampling method
O = recommended sample collection method inconclusive

Based on the results of the Phase I evaluation discussed in this Phase I Report, it is recommended that a hybrid sample collection program be implemented for Phase II. Such a hybrid approach would focus on using the most appropriate sampling technique for each applicable parameter group. It is also recommended that Phase II be implemented in additional phases to continue to collect data and make adjustments (if needed) to meet program objectives. Given the number of additional sampling locations remaining to be sampled (eight CSOs, 10 SWOs, and one POTW sample [quarterly basis for 1 year]) during Phase II, an iterative evaluation of the Phase II data will allow flexibility in making adjustments to the program and help avoid collection of a large amount of data that do not meet program objectives.

Tierra recommends a meeting with the USEPA to review the results of the Phase I evaluation and develop the approach and scope for the Phase II CSO/SWO investigation program that considers factors, including sampling technique, implementability, data needs, locations, and schedule.

## 7. References

Great Lakes Environmental Center. 2008. New York-New Jersey Harbor Estuary Program Contaminant Assessment and Reduction Program. New Jersey Toxics Reduction Work Plan Study I-G Project Report, February 2008.

Malcolm Pirnie, Inc. 2008. Rain Event Program Narrative, Lower Passaic River Restoration Project (version 11/05/2008) Source: www.ourPassaic.org.

The Louis Berger Group (in conjunction with Battelle HDR/HydroQual). 2014. Lower Eight Miles of the Lower Passaic River. Focused Feasibility Report. For U. S. Environmental Protection Agency, Region 2 and U.S. Army Corps of Engineers, Kansas City District.

Tierra. 2002. Remedial Investigation – Combined Sewer Overflow Investigation, Volume 1, Work Plan/Field Sampling Plan. May.

Tierra. 2013. Combined Sewer Overflow/Stormwater Outfall Investigation Quality Assurance Project Plan. Lower Passaic River Study Area. Revision 3. September 2013.

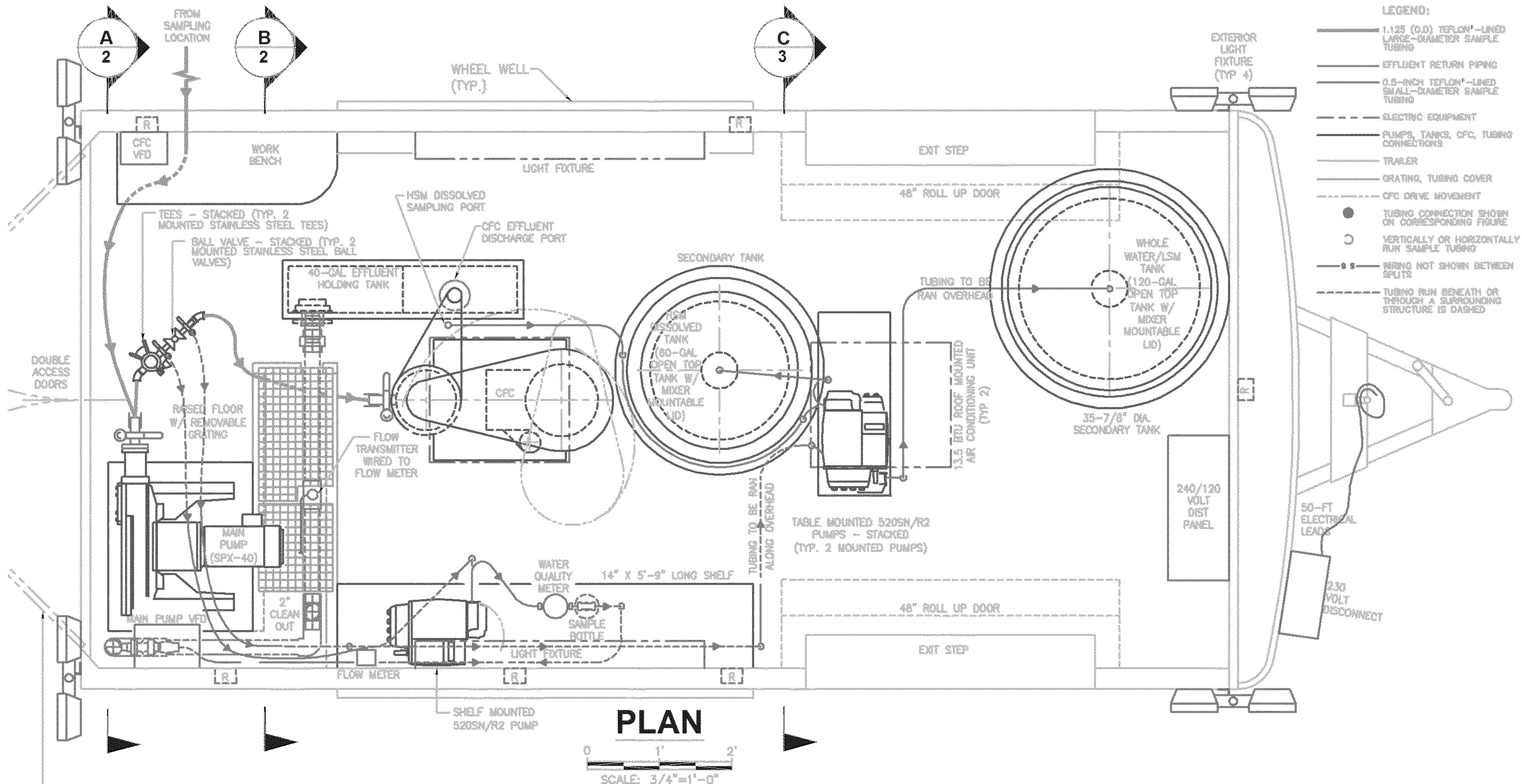
Tierra 2016. Combined Sewer Overflow/Stormwater Outfall Investigation Phase I Data Quality Usability Assessment Report, Revision 1. March 2016.

USEPA. 1996. Method 1669, Sampling Ambient Water for Trace Metals at EPA Water Criterion Levels, U.S. Environmental Protection Agency, Office of Water Engineering and Analysis Division (4303), July 1996.

USEPA. 2008. Combined Sewer Overflow/Stormwater Overflow Sampling and Analytical Plan, Revision No. 2.0. August.

USEPA. 2014. Email Correspondence approving additional chlorinated herbicide samples. February 20.

## Figures




NOTES:

1. CSO/SWO SAMPLING TRAILER SCHEMATIC BASE MAP RECEIVED FROM GROUNDWATER TREATMENT AND TECHNOLOGY, INC. OF DENVILLE, NJ ON FEBRUARY 7, 2013. (GWTT FILE # 11-2092)
2. DETACHABLE EXTERIOR LIGHT FIXTURES MUST BE REMOVED DURING TRANSPORT.
3. AUXILIARY TRAILER JACKS WILL BE MOUNTED TO LEVEL THE TRAILER AND CFC. BUBBLE LEVELS ARE MOUNTED TO THE OUTSIDE OF THE TRAILER TO ASSIST WITH LEVELING.
4. 50-FT ELECTRICAL LEADS WILL BE ATTACHED TO A PORTABLE 20-KW DIESEL GENERATOR CAPABLE OF PRODUCING THREE-PHASE 240V POWER SOURCE.
5. THE HSM AND LSM TANKS WILL BE FITTED WITH TEFLON® TANK LINERS FOR SAMPLE COLLECTION. ICE WILL BE PLACED BETWEEN THE TANK AND SECONDARY CONTAINMENT TANKS FOR SAMPLE PRESERVATION.
6. DETACHABLE MIXER (PNEUMATIC) WILL BE MOUNTED TO THE HSM AND LSM TANK LIDS DURING SUB-SAMPLING.

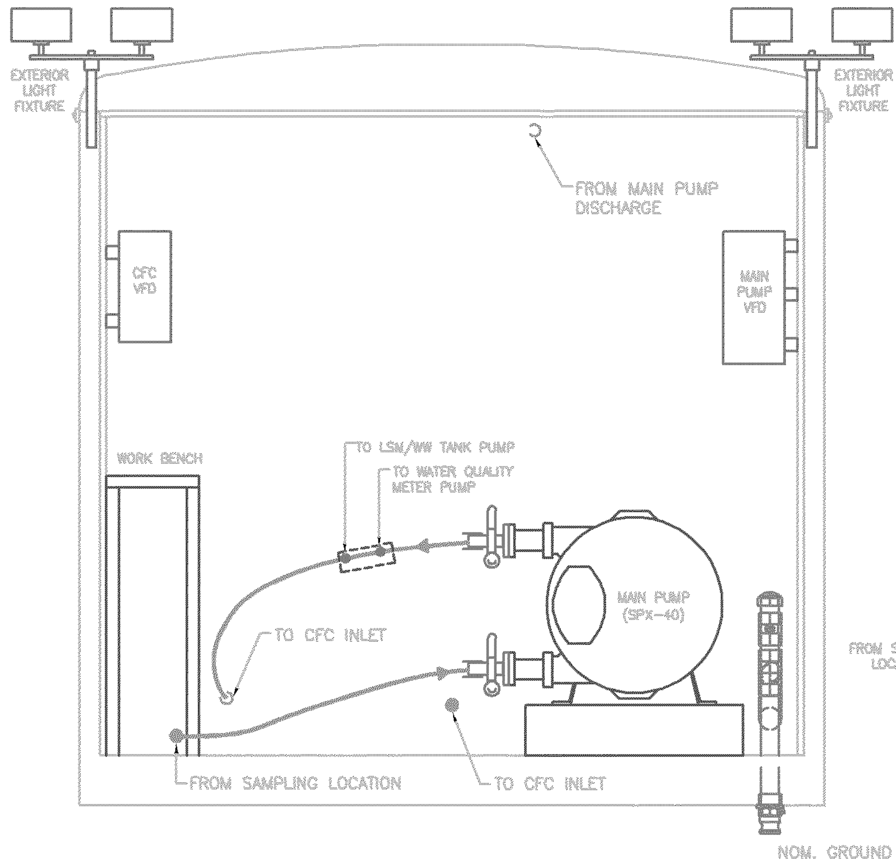
BTU = BRITISH THERMAL UNIT
CSO/SWO = COMBINED SEWER OVERFLOW/STORM WATER OUTFALL
CFC = CONTINUOUS FLOW CENTRIFUGE
HSM = HIGH-SOLIDS MASS
LSM = LOW-SOLIDS MASS
R = RECEPTACLE (12V ELECTRIC)
TYP = TYPICAL
VFD = VARIABLE FREQUENCY DRIVE

LOWER PASSAIC RIVER STUDY AREA
**CSO/SWO INVESTIGATION PHASE I EVALUATION/RECOMMENDATION REPORT**

**CSO/SWO SAMPLE COLLECTION SYSTEM AND TRAILER SCHEMATIC**

JUNE 2016

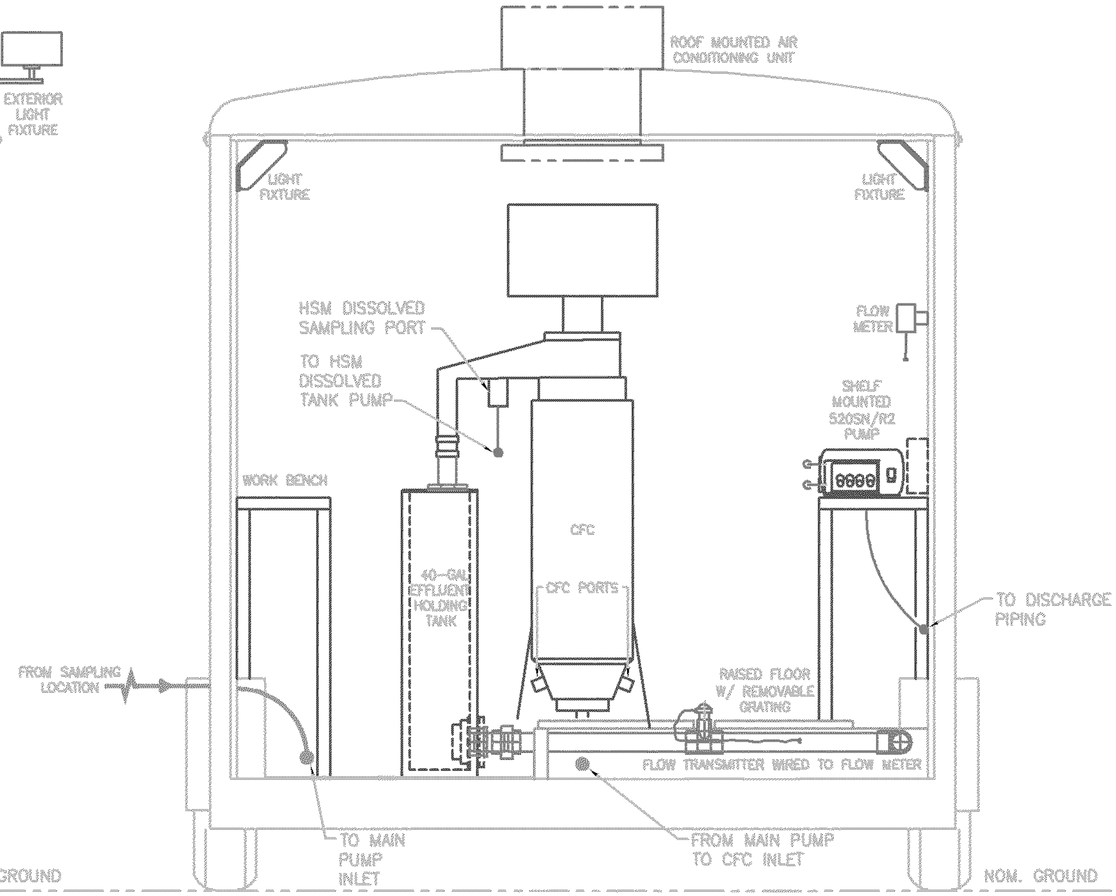
FIGURE **2-1**




# SECTION A/1

0 1' 2'

SCALE: 3/4"=1'-0"




# SECTION B/1

0 1' 2'

SCALE: 3/4"=1'-0"

LEGEND:

- 1.125 (O.D) TEFLON®-LINED LARGE-DIAMETER SAMPLE TUBING
- EFFLUENT RETURN PIPING
- 0.5-INCH TEFLON®-LINED SMALL-DIAMETER SAMPLE TUBING
- ELECTRIC EQUIPMENT
- PUMPS, TANKS, CFC, TUBING CONNECTIONS
- TRAILER
- GRATING, TUBING COVER
- CFC DRIVE MOVEMENT
- TUBING CONNECTION SHOWN ON CORRESPONDING FIGURE
- VERTICALLY OR HORIZONTALLY RUN SAMPLE TUBING
- WIRING NOT SHOWN BETWEEN SPLITS
- TUBING RUN BENEATH OR THROUGH A SURROUNDING STRUCTURE IS DASHED

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NOTES:

1. CSO/SWO SAMPLING TRAILER SCHEMATIC BASE MAP RECEIVED FROM GROUNDWATER TREATMENT AND TECHNOLOGY, INC. OF DENVILLE, NJ ON FEBRUARY 7, 2013. (GWTT FILE # 11-2082)
2. DETACHABLE EXTERIOR LIGHT FIXTURES MUST BE REMOVED DURING TRANSPORT.
3. AUXILIARY TRAILER JACKS WILL BE MOUNTED TO LEVEL THE TRAILER AND CFC. BUBBLE LEVELS ARE MOUNTED TO THE OUTSIDE OF THE TRAILER TO ASSIST WITH LEVELING.
4. 50-FT ELECTRICAL LEADS WILL BE ATTACHED TO A PORTABLE 20-KW DIESEL GENERATOR CAPABLE OF PRODUCING THREE-PHASE 240V POWER SOURCE.
5. THE HSM AND LSM TANKS WILL BE FITTED WITH TEFLON® TANK LINERS FOR SAMPLE COLLECTION. ICE WILL BE PLACED BETWEEN THE TANK AND SECONDARY CONTAINMENT TANKS FOR SAMPLE PRESERVATION.
6. DETACHABLE MIXER (PNEUMATIC) WILL BE MOUNTED TO THE HSM AND LSM TANK LIDS DURING SUB-SAMPLING.

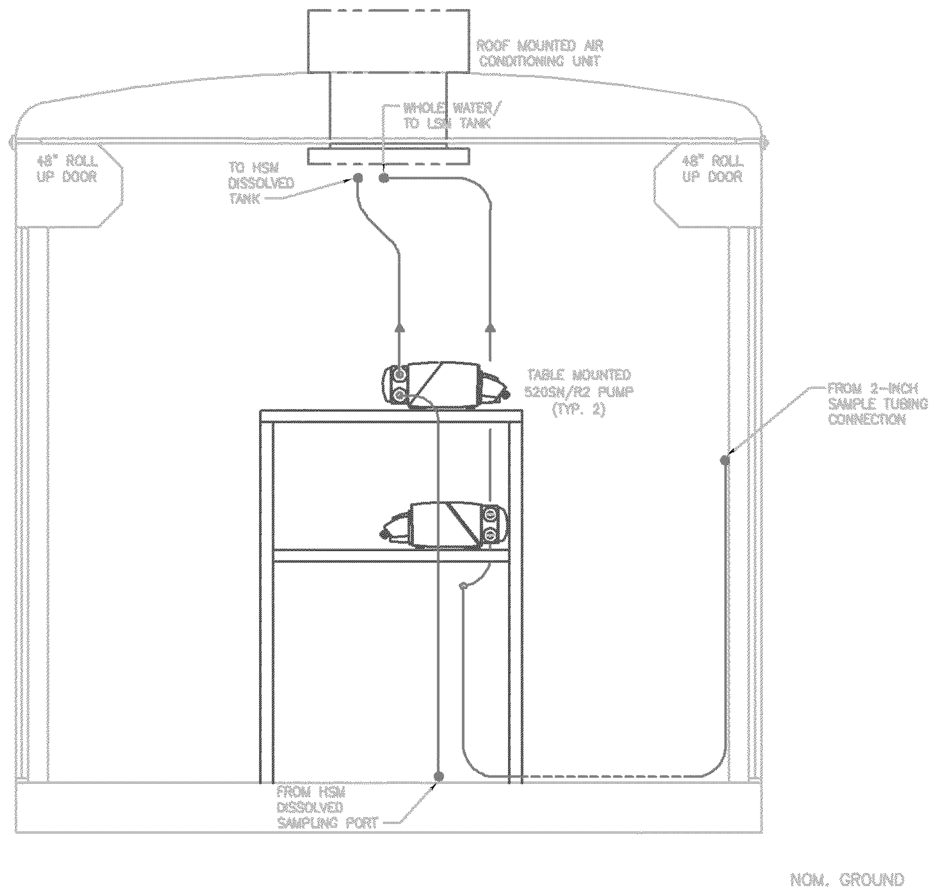
LOWER PASSAIC RIVER STUDY AREA
**CSO/SWO INVESTIGATION PHASE I EVALUATION/RECOMMENDATION REPORT**

**CSO/SWO SAMPLE COLLECTION SYSTEM AND TRAILER SCHEMATIC - CROSS-SECTIONS A AND B**

JUNE **2016**

FIGURE **2-2**


CITY: SYRACUSE, NY DIV/GROUP: EBC-IM/DV DB: L.POSENAUER PM: D.BOLDUC TM: K.GANDHI LYR:(Opt)ON=*;OFF=*REF* G:\ENVCAD\SYRACUSE\ACT\B0009979\0013\00001\TRAILER\09979002_1-23.dwg LAYOUT: 2-2 SAVED: 2/5/2016 9:15 AM ACADVER: 19.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 2/5/2016 9:15 AM BY: POSENAUER, LISA
XREFS: 09979X00 IMAGES:




## SECTION C/1

0 1' 2'

SCALE: 3/4"=1'-0"

LEGEND:

- 1-INCH TEFLON®-LINED SAMPLE TUBING
- EFFLUENT RETURN PIPING
- 0.5-INCH TEFLON®-LINED SAMPLE TUBING
- ELECTRIC EQUIPMENT
- PUMPS, TANKS, CFC, TUBING CONNECTIONS
- TRAILER
- CFC DRIVE MOVEMENT
- TUBING CONNECTION SHOWN ON CORRESPONDING FIGURE
- VERTICALLY OR HORIZONTALLY RUN SAMPLE TUBING
- WIRING NOT SHOWN BETWEEN SPLITS
- TUBING RUN BENEATH OR THROUGH A SURROUNDING STRUCTURE IS DASHED

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LSM = LOW-SOLIDS MASS

R = RECEPTACLE (12V ELECTRIC)

TYP = TYPICAL

VFD = VARIABLE FREQUENCY DRIVE

NOTES:

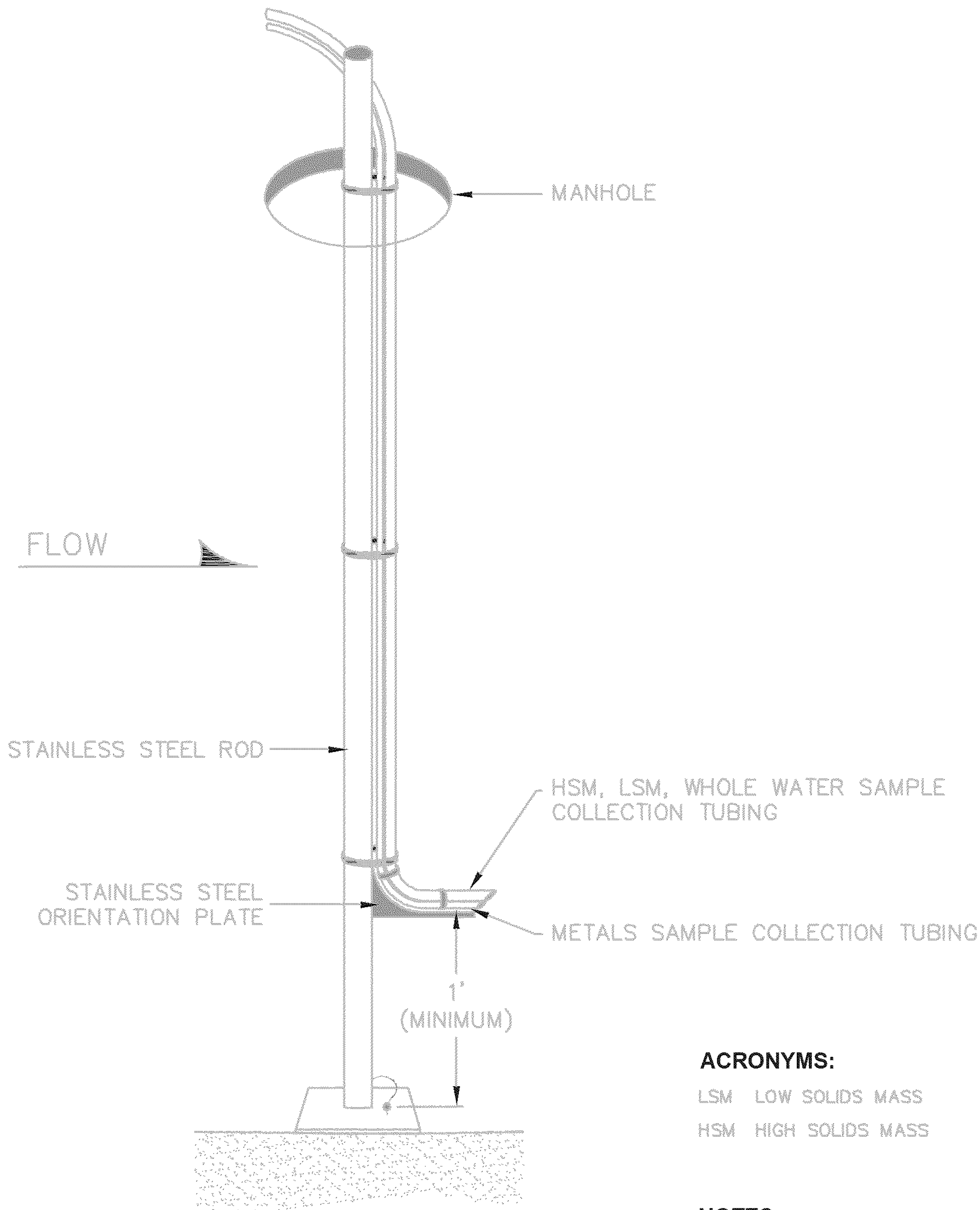
1. CSO/SWO SAMPLING TRAILER SCHEMATIC BASE MAP RECEIVED FROM GROUNDWATER TREATMENT AND TECHNOLOGY, INC. OF DENVILLE, NJ ON FEBRUARY 7, 2013. (GWTT FILE # 11-2092)
2. DETACHABLE EXTERIOR LIGHT FIXTURES MUST BE REMOVED DURING TRANSPORT.
3. AUXILIARY TRAILER JACKS WILL BE MOUNTED TO LEVEL THE TRAILER AND CFC. BUBBLE LEVELS ARE MOUNTED TO THE OUTSIDE OF THE TRAILER TO ASSIST WITH LEVELING.
4. 50-FT ELECTRICAL LEADS WILL BE ATTACHED TO A PORTABLE 20-KW DIESEL GENERATOR CAPABLE OF PRODUCING THREE-PHASE 240V POWER SOURCE.
5. THE HSM AND LSM TANKS WILL BE FITTED WITH TEFLON® TANK LINERS FOR SAMPLE COLLECTION. ICE WILL BE PLACED BETWEEN THE TANK AND SECONDARY CONTAINMENT TANKS FOR SAMPLE PRESERVATION.
6. DETACHABLE MIXER (PNEUMATIC) WILL BE MOUNTED TO THE HSM AND LSM TANK LIDS DURING SUB-SAMPLING.

LOWER PASSAIC RIVER STUDY AREA
**CSO/SWO INVESTIGATION PHASE I EVALUATION/RECOMMENDATION REPORT**

**CSO/SWO SAMPLE COLLECTION SYSTEM AND TRAILER SCHEMATIC - CROSS-SECTION C**

JUNE **2016**

FIGURE **2-3**




**ACRONYMS:**

LSM LOW SOLIDS MASS

HSM HIGH SOLIDS MASS

**NOTES:**

1. EQUIPMENT SIZES ARE APPROXIMATE.
2. FIGURE FOR VISUAL AID ONLY.

**NOT TO SCALE**

LOWER PASSAIC RIVER STUDY AREA
**CSO/SWO INVESTIGATION PHASE I**
**EVALUATION / RECOMMENDATION REPORT**

**SCHEMATIC OF WEIGHTED ROD/TUBING ASSEMBLY**

JUNE 2016

**2-4**

## Appendix A

Event #1, Attempt # 1 Results – PCDDs/PCDFs

## EVENT 1 ORIGINAL SAMPLE - DIOXIN
**PR1CSOCLY**-01A**

**Positive Target Analyte Identification and Concentration Comparison[a]**

| Analyte Identified | PR1CSOCLYWW-01A Whole Water[b] (pg/L) | LQ[c] | VQ | PR1CSOCLYLD-01A LSM Dissolved[f] (pg/L) | LQ[c] | VQ | PR1CSOCLYHD-01A HSM Dissolved[b] (pg/L) | LQ[c] | VQ | % RPD | PR1CSOCLYLP-01A LSM Particulate[b] (pg/g) | LQ[c] | VQ | PR1CSOCLYHP-01A HSM Particulate[b] (pg/g) | LQ[c] | VQ | % RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,3,7,8-TCDD | | | | | | | | | | | | | | 2.36 | | J | |
| 1,2,3,7,8-PeCDD | | | | | | | 0.182 | G | | | 6.50 | G | | 4.34 | G | M | **40** |
| 1,2,3,4,7,8-HxCDD | 0.859 | G | | | | | 0.347 | G | | | 12.0 | G | | 5.96 | | M | **67** |
| 1,2,3,6,7,8-HxCDD | 2.37 | G | | 0.304 | G | | 1.19 | G | | **119** | 43.9 | G | | 21.4 | | M | **69** |
| 1,2,3,7,8,9-HxCDD | 1.56 | G | | 0.254 | G | J | 0.894 | G | | **111** | 25.4 | G | | 15.3 | | M | **50** |
| 1,2,3,4,6,7,8-HpCDD | 62.1 | | J | 6.33 | | J | 32.6 | | J | **135** | 1940 | | J | 672 | | M | **97** |
| OCDD | 715 | | J | 41.7 | | J | 365 | | J | **159** | 15700 | | J | 9480 | D | M | **49** |
| 2,3,7,8-TCDF | | | | | | | 0.148 | G | | | 5.49 | G | | 4.76 | | M | **14** |
| 1,2,3,7,8-PeCDF | 0.228 | G | | | | | | | | | 4.09 | G | | 3.76 | G | M | **8** |
| 2,3,4,7,8-PeCDF | | | | 0.0854 | G | | 0.266 | G | | **103** | 14.2 | G | | 4.76 | G | M | **100** |
| 1,2,3,4,7,8-HxCDF | 1.68 | G | | 0.314 | G | J | 0.982 | G | | **103** | 23.4 | G | | 20.9 | | J | **11** |
| 1,2,3,6,7,8-HxCDF | | | | 0.361 | G | J | 0.962 | G | | **91** | 24.4 | G | | 15.4 | | M | **45** |
| 2,3,4,6,7,8-HxCDF | 1.69 | G | | 0.277 | G | J | 1.04 | G | | **116** | 28.2 | G | | 19.0 | | M | **39** |
| 1,2,3,7,8,9-HxCDF | | | | | | | | | | | 4.84 | G | | 1.53 | G | M | **104** |
| 1,2,3,4,6,7,8-HpCDF | 18.0 | | | 3.40 | | J | 16.6 | | | **132** | 396 | | J | 245 | | M | **47** |
| 1,2,3,4,7,8,9-HpCDF | 1.56 | G | | | | | | | | | 28.1 | G | | 16.4 | | M | **53** |
| OCDF | 36.6 | | | 6.05 | | J | 37.0 | | J | **144** | 790 | | J | 486 | | M | **48** |

COPCs/COPECs listed in the FFS: 2,3,7,8-TCDD; 1,2,3,7,8-PeCDD; 1,2,3,6,7,8-HxCDD; 1,2,3,4,7,8-HxCDD; 1,2,3,7,8,9-HxCDD; 1,2,3,4,6,7,8-HpCDD; OCDD; 2,3,7,8-TCDF; 1,2,3,7,8-PeCDF; 2,3,4,7,8-PeCDF; 1,2,3,6,7,8-HxCDF; 1,2,3,7,8,9-HxCDF; 1,2,3,4,7,8-HxCDF; 2,3,4,6,7,8-HxCDF; 1,2,3,4,6,7,8-HpCDF; 1,2,3,4,7,8,9-HpCDF; and OCDF.

[a] Positive target analyte identification and concentration comparison chart will comprise the detected analytes from the full Target Analyte List. Additional pages may be necessary.
[b] No rejected data.
[c] A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate.
Values associated with a "G" qualifier are quantitatiovely less certain than those not associated with a "G" qualifier. This is because "G" qualified results fall below the low point of the calibration curve.

Notes:
COPCs = contaminants of potential concern
COPECs = contaminants of potential ecological concern
FFS = focused fesability study
HSM = high-solids mass
LSM = low-solids mass
LQ = laboratory qualifier - See Attachment 1 for definitions
PCDD/PCDF = polychlorinated dibenzo-p-dioxin/polychlorinated dibenzofuran
pg/g = picoograms per gram
pg/L = picograms per liter
RPD = relative percent difference
VQ = validation qualifier - See Attachment 2 for definitions
% = percent

**EVENT 1 FIELD DUPLICATE - DIOXIN**
**PR1**DUP-01A**

**Positive Target Analyte Identification and Concentration Comparison[a]**

| Analyte Identified | PR1WWDUP-01A Whole Water[b] (pg/L) | LQ[c] | VQ | PR1LDDUP-01A LSM Dissolved[b] (pg/L) | LQ[c] | VQ | PR1HDDUP-01A HSM Dissolved [b](pg/L) | LQ[c] | VQ | % RPD | PR1LPDUP-01A LSM Particulate[b] (pg/g) | LQ[c] | VQ | PR1HPDUP-01A HSM Particulate[b] (pg/g) | LQ[c] | VQ | % RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,3,7,8-TCDD | | | | | | | | | | | | | | 9.15 | | J | |
| 1,2,3,7,8-PeCDD | | | | | | | | | | | 4.37 | G | | 4.78 | G | M | 9 |
| 1,2,3,4,7,8-HxCDD | 0.514 | G | | | | | 0.411 | G | | | 6.63 | G | | 5.72 | | M | 15 |
| 1,2,3,6,7,8-HxCDD | 1.41 | G | | 0.313 | G | | 4.63 | | | 175 | 22.8 | G | | 21.2 | | M | 7 |
| 1,2,3,7,8,9-HxCDD | 1.18 | G | | | | | 2.49 | G | | | 15.5 | G | | 15.3 | | M | 1 |
| 1,2,3,4,6,7,8-HpCDD | 41.3 | | J | 6.41 | | J | 116 | | J | 179 | 845 | | J | 621 | | M | 31 |
| OCDD | 429 | | J | 44.0 | | J | 720 | | J | 177 | 8560 | | J | 8960 | D | M | 5 |
| 2,3,7,8-TCDF | | | | | | | 0.169 | G | | | 2.83 | G | | 4.90 | | M | 54 |
| 1,2,3,7,8-PeCDF | | | | | | | 0.139 | G | | | 3.14 | G | | 4.11 | G | M | 27 |
| 2,3,4,7,8-PeCDF | 0.248 | G | | | | | 0.248 | G | | | 8.37 | G | | 5.26 | | M | 46 |
| 1,2,3,4,7,8-HxCDF | 1.33 | G | | 0.364 | G | | 0.912 | G | | 86 | 13.3 | G | | 31.5 | | J | 81 |
| 1,2,3,6,7,8-HxCDF | 1.29 | G | | 0.373 | G | | 1.04 | G | | 94 | 14.0 | G | | 18.2 | | M | 26 |
| 2,3,4,6,7,8-HxCDF | 1.39 | G | | 0.321 | G | | 0.922 | G | | 97 | 15.8 | G | | 20.9 | | M | 28 |
| 1,2,3,7,8,9-HxCDF | | | | | | | | | | | 4.55 | G | | 1.89 | G | M | 83 |
| 1,2,3,4,6,7,8-HpCDF | 20.5 | | | 3.20 | | J | 17.6 | | J | 138 | 215 | | J | 271 | | M | 23 |
| 1,2,3,4,7,8,9-HpCDF | 1.56 | G | J | 0.363 | G | J | 1.45 | G | J | 120 | 16.2 | G | | 18.7 | | M | 14 |
| OCDF | 43.2 | | J | 5.90 | | J | 39.8 | | J | 148 | 432 | | J | 549 | | M | 24 |

COPCs/COPECs listed in the FFS: 2,3,7,8-TCDD; 1,2,3,7,8-PeCDD; 1,2,3,6,7,8-HxCDD; 1,2,3,4,7,8-HxCDD; 1,2,3,7,8,9-HxCDD; 1,2,3,4,6,7,8-HpCDD; OCDD; 2,3,7,8-TCDF; 1,2,3,7,8-PeCDF; 2,3,4,7,8-PeCDF; 1,2,3,6,7,8-HxCDF; 1,2,3,7,8,9-HxCDF; 1,2,3,4,7,8-HxCDF; 2,3,4,6,7,8-HxCDF; 1,2,3,4,6,7,8-HpCDF; 1,2,3,4,7,8,9-HpCDF; and OCDF.

[a] Positive target analyte identification and concentration comparison chart will comprise the detected analytes from the full Target Analyte List. Additional pages may be necessary.
[b] No rejected data.
[c] A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate.
Values associated with a "G" qualifier are quantitatiovely less certain than those not associated with a "G" qualifier. This is because "G" qualified results fall below the low point of the calibration curve.

Notes:
COPCs = contaminants of potential concern
COPECs = contaminants of potential ecological concern
FFS = focused fesability study
HSM = high-solids mass
LSM = low-solids mass
LQ = laboratory qualifier - See Attachment 1 for definitions
PCDD/PCDF = polychlorinated dibenzo-p-dioxin/polychlorinated dibenzofuran
pg/g = picoograms per gram
pg/L = picograms per liter
RPD = relative percent difference
VQ = validation qualifier - See Attachment 2 for definitions
% = percent

# Appendix B

Event #1, Attempt # 1 Results – PCB Congeners

**EVENT 1 ORIGINAL SAMPLE - PCB CONGENERS**
**PR1CSOCLY**-01A**

**Positive Target Analyte Identification and Concentration Comparison[a]**

| Analyte Identified | PR1CSOCLYWW-01A Whole Water [b](pg/L) | LQ[c] | VQ | PR1CSOCLYLD-01A LSM Dissolved[b] (pg/L) | LQ[c] | VQ | PR1CSOCLYHD-01A HSM Dissolved[b] (pg/L) | LQ[c] | VQ | % RPD | PR1CSOCLYLP-01A LSM Particulate[b] (pg/g) | LQ[c] | VQ | PR1CSOCLYHP-01A HSM Particulate[b] (pg/g) | LQ[c] | VQ | % RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PCB 1 | 26.3 | D | | | | | | | | | | | | 156 | D,G | M | |
| PCB 2 | | | | | | | | | | | | | | 97.6 | D,G | M | |
| PCB 3 | 17.8 | D,G | | | | | | | | | | | | 182 | D,G | M | |
| PCB 4/10 | 135 | D | | | | | | | | | | | | 870 | D | M | |
| PCB 5/8 | 164 | D | | | | | | | | | | | | 1340 | D | M | |
| PCB 6 | 57.7 | D | | 25.3 | D,G | | | | | | | | | 477 | D,G | M | |
| PCB 7/9 | | | | | | | | | | | | | | | | | |
| PCB 11 | 422 | D | J | | | | | | | | | | | | | | |
| PCB 12/13 | | | | | | | | | | | | | | | | | |
| PCB 14 | | | | | | | | | | | | | | | | | |
| PCB 15 | 78.6 | D | | | | | | | | | | | | 783 | D | M | |
| PCB 16/32 | 222 | B,D | J | | | | | | | | | | | 2260 | D | M | |
| PCB 17 | 121 | B,D | J | | | | | | | | | | | 1470 | D | M | |
| PCB 18 | 296 | B,D | J | | | | | | | | | | | 2890 | D | M | |
| PCB 19 | 63.9 | D | | | | | | | | | | | | 568 | D | M | |
| PCB 20/21/33 | 192 | B,D | J | | | | | | | | | | | 1130 | D | J | |
| PCB 22 | 127 | B,D | J | | | | | | | | | | | 912 | D | J | |
| PCB 23 | | | | | | | | | | | | | | | | | |
| PCB 24/27 | 31.1 | D | | | | | | | | | 524 | D,G | | 315 | D | M | 49.8 |
| PCB 25 | 52.0 | D | | 13.3 | D,G | | 43.6 | D | | 106.5 | 916 | D | | 369 | D | J | 85.1 |
| PCB 26 | 81.1 | D | | | | | | | | | 1390 | B,D | | 608 | D | J | 78.3 |
| PCB 28 | 370 | D | J | | | | | | | | 6420 | B,D | J | 2620 | D | J | 84.1 |
| PCB 29 | | | | | | | | | | | | | | | | | |
| PCB 30 | | | | | | | | | | | | | | | | | |
| PCB 31 | 309 | B,D | J | | | | | | | | 6260 | B,D | J | 2280 | D | J | 93.2 |
| PCB 34 | | | | | | | | | | | | | | | | | |
| PCB 35 | 27.0 | D | | 6.22 | D,G | | 16.4 | D,G | | 90.0 | 474 | B,D,G | | 197 | D,G | J | 82.6 |
| PCB 36 | | | | | | | | | | | 145 | D,G | | 75.1 | D,G | J | 63.5 |
| PCB 37 | 110 | B,D | J | | | | | | | | 1850 | B,D | J | 695 | D | J | 90.8 |
| PCB 38 | | | | | | | | | | | | | | | | | |
| PCB 39 | | | | | | | | | | | | | | | | | |
| PCB 40 | 94.9 | D | | | | | | | | | 1610 | D | | 835 | D | M | 63.4 |
| PCB 41/64/71/72 | 449 | B,D | J | | | | 215 | B,D | | | 8520 | B,D | J | 4210 | D | M | 67.7 |
| PCB 42/59 | 157 | D | J | | | | | | | | 2940 | B,D | J | 1350 | D | M | 74.1 |
| PCB 43/49 | 415 | B,D | J | | | | 195 | B,D | J | | 7790 | B,D | J | 4070 | D | M | 62.7 |
| PCB 44 | 568 | B,D | J | | | | | | | | 10600 | B,D | J | 5490 | D | M | 63.5 |
| PCB 45 | 79.3 | D | | | | | | | | | 1290 | D | | 693 | D | M | 60.2 |
| PCB 46 | 43.3 | D | | | | | | | | | 662 | D | | 325 | D | M | 68.3 |
| PCB 47 | 148 | B,D | J | | | | | | | | | | | | | | |
| PCB 48/75 | 75.1 | B,D | | | | | | | | | 1500 | D | | 755 | D | M | 66.1 |
| PCB 50 | | | | | | | | | | | | | | | | | |
| PCB 51 | 35.3 | D | | | | | | | | | | | | 316 | D | M | |
| PCB 52/69 | 822 | B,D | J | | | | 346 | B,D | J | | 15500 | B,D | J | 8120 | D | M | 62.5 |
| PCB 53 | 89.3 | D | | | | | | | | | 1550 | D | | 736 | D | M | 71.2 |
| PCB 54 | | | | | | | 2.16 | D,G | J | | | | | 19.9 | D,G | M | |
| PCB 55 | 15.2 | D,G | | | | | | | | | 232 | D,G | | 175 | D,G | M | 28.0 |
| PCB 56/60 | 340 | B,D | J | | | | 129 | B,D | | | 6910 | B,D | J | 3180 | D | M | 73.9 |
| PCB 57 | | | | | | | | | | | | | | 51.6 | D,G | M | |
| PCB 58 | | | | | | | | | | | | | | | | | |
| PCB 61/70 | 817 | B,D | J | | | | 309 | B,D | | | 15700 | B,D | J | 8380 | D | M | 60.8 |
| PCB 62 | | | | | | | | | | | | | | | | | |
| PCB 63 | 23.1 | D | | | | | 9.78 | D,G | | | 476 | D,G | | 270 | D | M | 55.2 |
| PCB 65 | | | | | | | | | | | | | | | | | |
| PCB 67 | 14.9 | D,G | | | | | | | | | 271 | D,G | | 134 | D,G | M | 67.7 |
| PCB 68 | 4.85 | B,D,G | | | | | | | | | | | | 49.4 | D,G | M | |
| PCB 73 | | | | | | | | | | | | | | | | | |
| PCB 74 | 242 | B,D | J | 44.2 | D | | 102 | D | | 79.1 | 4730 | B,D | J | 2360 | D | M | 66.9 |
| PCB 76/66 | 552 | B,D | J | | | | 207 | D | | | 10700 | B,D | J | 5110 | D | M | 70.7 |

| Analyte Identified | PR1CSOCLYWW-01A Whole Water [b](pg/L) | LQ[c] | VQ | PR1CSOCLYLD-01A LSM Dissolved[b] (pg/L) | LQ[c] | VQ | PR1CSOCLYHD-01A HSM Dissolved[b] (pg/L) | LQ[c] | VQ | % RPD | PR1CSOCLYLP-01A LSM Particulate[b] (pg/g) | LQ[c] | VQ | PR1CSOCLYHP-01A HSM Particulate[b] (pg/g) | LQ[c] | VQ | % RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PCB 77 | 72.3 | B,D | | | | | | | | | | | | 924 | D | M | |
| PCB 78 | | | | | | | | | | | | | | | | | |
| PCB 79 | 16.3 | B,D,G | | 5.38 | D,G | | 7.18 | D,G | | 28.7 | | | | 251 | D | M | |
| PCB 80 | | | | | | | | | | | | | | | | | |
| PCB 81 | 12.5 | D,G | | | | | | | | | | | | 95.7 | D,G | M | |
| PCB 82 | 228 | D | J | | | | 58.3 | D | | | 4460 | D | J | 2890 | D | J | 42.7 |
| PCB 83 | | | | | | | | | | | | | | | | | |
| PCB 84/92 | 674 | B,D | J | | | | 197 | B,D | J | | 12600 | D | J | 8330 | D | J | 40.8 |
| PCB 85/116 | 215 | D | J | | | | 47.6 | D | J | | 4210 | D | J | 2690 | D | J | 44.1 |
| PCB 86 | | | | | | | | | | | | | | | | | |
| PCB 87/117/125 | 677 | B,D | J | | | | 193 | D | J | | 11500 | D | J | 8010 | D | J | 35.8 |
| PCB 88/91 | 209 | D | J | | | | 54.2 | D | J | | 3680 | D | J | 2330 | D | J | 44.9 |
| PCB 89 | 18.5 | D,G | J | | | | | | | | 327 | D,G | J | 174 | D,G | J | 61.1 |
| PCB 90/101 | 1660 | B,D | J | | | | 466 | B,D | J | | 30700 | B,D | J | 20200 | D | J | 41.3 |
| PCB 93 | | | | | | | | | | | | | | | | | |
| PCB 94 | | | | | | | | | | | | | | | | | |
| PCB 95/98/102 | 1180 | B,D | J | | | | | | | | 20900 | B,D | J | 14000 | D | J | 39.5 |
| PCB 96 | | | | | | | | | | | 181 | D,G | J | 128 | D,G | J | 34.3 |
| PCB 97 | 520 | D | J | | | | 156 | D | J | | 9390 | D | J | 6330 | D | J | 38.9 |
| PCB 99 | 607 | B,D | J | | | | 177 | D | J | | 11200 | D | J | 7960 | D | J | 33.8 |
| PCB 100 | | | | | | | | | | | | | | | | | |
| PCB 103 | | | | | | | | | | | 124 | D,G | J | 124 | D,G | J | 0.0 |
| PCB 104 | | | | | | | | | | | | | | | | | |
| PCB 105 | 684 | D | J | | | | 177 | D | | | 11600 | B,D | J | 8250 | D | J | 33.8 |
| PCB 106/118 | 1560 | B,D | J | | | | 401 | B,D | | | 29000 | B,D | J | 20100 | D | J | 36.3 |
| PCB 107/109 | 74.7 | D | J | | | | 22.3 | D | | | 1750 | D | J | 1100 | D | J | 45.6 |
| PCB 108/112 | 72.6 | D | J | 14.6 | D,G | | 22.7 | D | J | 43.4 | 1260 | D | J | 935 | D | J | 29.6 |
| PCB 110 | 1670 | B,D | J | | | | 423 | B,D | J | | 31200 | B,D | J | 20000 | D | J | 43.8 |
| PCB 111/115 | 23.0 | D | J | | | | | | | | 650 | D | J | 286 | D | J | 77.8 |
| PCB 113 | | | | | | | | | | | | | | | | | |
| PCB 114 | 34.1 | D | J | | | | 12.1 | D,G | J | | 658 | D | J | 557 | D | J | 16.6 |
| PCB 119 | 22.4 | D | J | | | | 6.77 | D,G | J | | 429 | D,G | J | 263 | D | J | 48.0 |
| PCB 120 | | | | | | | | | | | | | | | | | |
| PCB 121 | | | | | | | | | | | | | | | | | |
| PCB 122 | 15.5 | D | J | | | | | | | | 402 | D,G | J | 221 | D,G | J | 58.1 |
| PCB 123 | | | | | | | | | | | 628 | D | J | 301 | D | J | 70.4 |
| PCB 124 | 73.7 | D | J | | | | 19.7 | D,G | | | 1450 | D | J | 960 | D | J | 40.7 |
| PCB 126 | 20.7 | D,G | J | | | | | | | | | | | 261 | D | J | |
| PCB 127 | | | | | | | | | | | | | | | | | |
| PCB 128/162 | 376 | B,D | J | | | | 82.2 | D | | | | | | 5210 | D | J | |
| PCB 129 | 129 | B,D | J | | | | 33.6 | D | | | | | | 1740 | D | J | |
| PCB 130 | 117 | B,D | J | | | | 25.7 | D | | | | | | 1720 | D | J | |
| PCB 131 | | | | | | | | | | | | | | | | | |
| PCB 132/161 | 532 | B,D | J | | | | 122 | D | | | 9660 | D | J | 7190 | D | J | 29.3 |
| PCB 133/142 | 61.6 | D | J | | | | 15.3 | D,G | | | 962 | D | J | 748 | D | J | 25.0 |
| PCB 134/143 | 120 | D | J | | | | 29.8 | D | | | 1880 | D | J | 1480 | D | J | 23.8 |
| PCB 135 | 156 | D | J | | | | 48.2 | D | | | | | | 2020 | D | J | |
| PCB 136 | 169 | D | J | | | | 41.9 | D | | | | | | 1880 | D | J | |
| PCB 137 | 73.7 | D | J | | | | 18.5 | D,G | | | | | | 854 | D | J | |
| PCB 138/163/164 | 1990 | B,D | J | | | | 426 | B,D | | | 32800 | B,D | J | 25100 | D | J | 26.6 |
| PCB 139/149 | 1040 | D | J | | | | 300 | B,D | | | 19700 | D | J | 13700 | D | J | 35.9 |
| PCB 140 | | | | | | | | | | | | | | | | | |
| PCB 141 | 358 | B,D | J | | | | 83.8 | D | | | 6340 | D | J | 4640 | D | J | 31.0 |
| PCB 144 | 57.2 | D | J | | | | 18.4 | D,G | | | 1170 | D | J | 873 | D | J | 29.1 |
| PCB 145 | | | | | | | | | | | | | | | | | |
| PCB 146/165 | 200 | D | J | | | | 50.2 | D | | | 3510 | D | J | 2500 | D | J | 33.6 |
| PCB 147 | 22.8 | D | J | | | | | | | | 420 | D,G | J | 273 | D | J | 42.4 |
| PCB 148 | | | | | | | | | | | | | | | | | |
| PCB 150 | | | | | | | | | | | | | | | | | |
| PCB 151 | 255 | D | J | | | | | | | | 4450 | D | J | 2960 | D | J | 40.2 |
| PCB 152 | | | | | | | | | | | | | | | | | |
| PCB 153 | 1440 | B,D | J | | | | 360 | B,D | | | 24100 | B,D | J | 16700 | D | J | 36.3 |
| PCB 154 | 13.4 | D,G | J | | | | | | | | 178 | D,G | J | 146 | D,G | J | 19.8 |

| Analyte Identified | PR1CSOCLYWW-01A Whole Water [b](pg/L) | LQ[c] | VQ | PR1CSOCLYLD-01A LSM Dissolved[b] (pg/L) | LQ[c] | VQ | PR1CSOCLYHD-01A HSM Dissolved[b] (pg/L) | LQ[c] | VQ | % RPD | PR1CSOCLYLP-01A LSM Particulate[b] (pg/g) | LQ[c] | VQ | PR1CSOCLYHP-01A HSM Particulate[b] (pg/g) | LQ[c] | VQ | % RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PCB 155 | 12.8 | D,G | J | | | | | | | | 255 | D,G | J | 148 | D,G | J | 53.1 |
| PCB 156 | 218 | B,D | J | | | | 46.7 | D | | | | | | 3140 | D | J | |
| PCB 157 | 56.6 | B,D | J | | | | | | | | | | | 758 | D | J | |
| PCB 158/160 | 243 | B,D | J | | | | 48.3 | D | | | | | | 2950 | D | J | |
| PCB 159 | | | | | | | | | | | | | | | | | |
| PCB 166 | | | | | | | | | | | | | | 181 | D,G | J | |
| PCB 167 | 95.1 | B,D | J | | | | 20.5 | D,G | | | | | | 1360 | D | J | |
| PCB 168 | | | | | | | | | | | | | | | | | |
| PCB 169 | | | | | | | | | | | | | | | | | |
| PCB 170 | 365 | B,D | J | | | | 92.0 | D | | | 6300 | D | J | 5570 | D | J | 12.3 |
| PCB 171 | 102 | D | J | | | | 23.5 | D | | | 1740 | D | J | 1420 | D | J | 20.3 |
| PCB 172 | 61.7 | D | J | | | | | | | | 952 | D | J | 833 | D | J | 13.3 |
| PCB 173 | | | | | | | | | | | | | | | | | |
| PCB 174 | 413 | D | J | | | | 94.3 | D | | | 6990 | D | J | 5140 | D | J | 30.5 |
| PCB 175 | | | | | | | | | | | 262 | D,G | J | 186 | D,G | J | 33.9 |
| PCB 176 | 44.8 | D | J | 7.87 | D,G | | 11.6 | D,G | | 38.3 | 731 | D | J | 608 | D | J | 18.4 |
| PCB 177 | 250 | B,D | J | | | | 55.8 | D | | | 4110 | D | J | 3180 | D | J | 25.5 |
| PCB 178 | 70.8 | D | J | | | | | | | | 1020 | D | J | 877 | D | J | 15.1 |
| PCB 179 | 165 | D | J | | | | | | | | 2450 | D | J | 2030 | D | J | 18.8 |
| PCB 180 | 889 | B,D | J | | | | | | | | 15200 | D | J | 11400 | D | J | 28.6 |
| PCB 181 | | | | | | | | | | | | | | | | | |
| PCB 182/187 | 388 | B,D | J | | | | | | | | 6190 | D | J | 4870 | D | J | 23.9 |
| PCB 183 | 177 | D | J | | | | | | | | 2990 | D | J | 2260 | D | J | 27.8 |
| PCB 184 | 18.5 | D,G | J | | | | | | | | 299 | D,G | J | 217 | D,G | J | 31.8 |
| PCB 185 | 43.8 | D | J | | | | 11.1 | D,G | | | 694 | D | J | 519 | D | J | 28.9 |
| PCB 186 | | | | | | | | | | | | | | | | | |
| PCB 188 | | | | | | | | | | | | | | | | | |
| PCB 189 | | | | | | | | | | | | | | | | | |
| PCB 190 | 99.0 | D | J | 8.57 | D,G | | 16.8 | D,G | | 64.9 | 1220 | D | J | 1060 | D | J | 14.0 |
| PCB 191 | | | | | | | | | | | | | | 217 | D,G | J | |
| PCB 192 | | | | | | | | | | | | | | | | | |
| PCB 193 | 66.0 | D | J | | | | | | | | 685 | D | J | 510 | D | J | 29.3 |
| PCB 194 | 191 | D | J | | | | | | | | 3110 | B,D | J | 2540 | D | J | 20.2 |
| PCB 195 | 86.2 | D | J | | | | | | | | 1160 | D | J | 1310 | D | J | 12.1 |
| PCB 196/203 | 152 | D | J | | | | | | | | 3260 | D | J | 1900 | D | J | 52.7 |
| PCB 197 | | | | | | | | | | | | | | 112 | D,G | J | |
| PCB 198 | | | | | | | | | | | | | | | | | |
| PCB 199 | 165 | B,D | J | | | | | | | | 2730 | D | J | 2060 | D | J | 28.0 |
| PCB 200 | 24.6 | D | J | | | | | | | | 426 | D,G | J | | | | |
| PCB 201 | 29.3 | D | J | | | | | | | | 462 | D,G | J | 353 | D | J | 26.7 |
| PCB 202 | 44.8 | D | J | 4.88 | D,G | | | | | | 813 | D | J | 561 | D | J | 36.7 |
| PCB 204 | | | | | | | | | | | | | | | | | |
| PCB 205 | | | | | | | | | | | | | | | | | |
| PCB 206 | 132 | B,D | J | | | | | | | | 2680 | D | J | 1930 | D | J | 32.5 |
| PCB 207 | | | | | | | | | | | 253 | D,G | J | 166 | D,G | J | 41.5 |
| PCB 208 | 49.0 | D | J | | | | | | | | 1000 | D | J | 608 | D | J | 48.8 |
| PCB 209 | 94.7 | B,D | J | | | | | | | | | | | 1410 | D | J | |

COPCs/COPECs listed in the FFS: PCB -77, PCB -81, PCB -105, PCB -114, PCB -118, PCB -123, PCB -126, PCB -156, PCB -157, PCB -167, PCB -169, and PCB -189.

[a] Positive target analyte identification and concentration comparison chart will comprise the detected analytes from the full Target Analyte List. Additional pages may be necessary.

[b] No rejected data.

[c] A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate. Values associated with a "G" qualifier are quantitatiovely less certain than those not associated with a "G" qualifier. This is because "G" qualified results fall below the low point of the calibration curve.

Notes:

COPCs = contaminants of potential concern
COPECs = contaminants of potential ecological concern
FFS = focused fesability study
HSM = high-solids mass
LSM = low-solids mass
LQ = laboratory qualifier - See Attachment 1 for definitions
PCB = polychlorinated biphenyl
pg/g = picograms per gram
pg/L = picograms per liter
RPD = relative percent difference
VQ = validation qualifier - See Attachment 2 for definitions
% = percent

**EVENT 1 FIELD DUPLICATE - PCB CONGENERS**
**PR1**DUP-01A**

**Positive Target Analyte Identification and Concentration Comparison[a]**

| Analyte Identified | PR1WWDUP-02B Whole Water[b] (pg/L) | LQ[c] | VQ | PR1LDDUP-02B LSM Dissolved[b] (pg/L) | LQ[c] | VQ | PR1HDDUP-02B HSM Dissolved[b] (pg/L) | LQ[c] | VQ | % RPD | PR1LPDUP-02B LSM Particulate[b] (pg/g) | LQ[c] | VQ | PR1HPDUP-02B HSM Particulate[b] (pg/g) | LQ[c] | VQ | % RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PCB 1 | 24.6 | D | J | | | | | | | | | | | 158 | D,G | M | |
| PCB 2 | | | | | | | | | | | | | | 93.7 | D,G | M | |
| PCB 3 | 15.3 | D,G | | | | | | | | | | | | 193 | D,G | M | |
| PCB 4/10 | 103 | D | J | | | | | | | | | | | 804 | D | M | |
| PCB 5/8 | 104 | D | J | | | | | | | | | | | 1270 | D | M | |
| PCB 6 | 36.8 | D,G | J | 23.6 | D,G | J | | | | | | | | 438 | D,G | M | |
| PCB 7/9 | | | | | | | | | | | | | | | | | |
| PCB 11 | 280 | D | J | | | | | | | | | | | | | | |
| PCB 12/13 | | | | | | | 12.1 | D,G | | | | | | | | | |
| PCB 14 | | | | | | | | | | | | | | | | | |
| PCB 15 | 30.6 | D | J | | | | | | | | | | | 706 | D | M | |
| PCB 16/32 | 160 | B,D | J | | | | | | | | | | | 2180 | D | M | |
| PCB 17 | 78.2 | B,D | J | | | | | | | | | | | 1400 | D | M | |
| PCB 18 | 180 | B,D | J | | | | | | | | | | | 2830 | D | M | |
| PCB 19 | 49.0 | D | | | | | | | | | | | | 581 | D | M | |
| PCB 20/21/33 | 104 | B,D | J | | | | | | | | | | | 1050 | D | J | |
| PCB 22 | 81.2 | B,D | J | | | | | | | | | | | 679 | D | J | |
| PCB 23 | | | | | | | | | | | | | | | | | |
| PCB 24/27 | 14.2 | D,G | | | | | | | | | | | | 305 | D | M | |
| PCB 25 | 34.1 | D | | 15.8 | D,G | | 44.7 | D | | 95.5 | 293 | D,G | | 344 | D | J | 16.0 |
| PCB 26 | 46.3 | D | | | | | | | | | | | | 446 | D | J | |
| PCB 28 | 217 | D | J | | | | | | | | | | | 2880 | D | J | |
| PCB 29 | | | | | | | | | | | | | | | | | |
| PCB 30 | | | | | | | | | | | | | | | | | |
| PCB 31 | 210 | B,D | J | | | | | | | | | | | 2260 | D | J | |
| PCB 34 | | | | | | | | | | | | | | | | | |
| PCB 35 | 15.0 | D,G | | | | | 12.4 | D,G | | | | | | 244 | D | J | |
| PCB 36 | | | | | | | | | | | | | | 63.2 | D,G | J | |
| PCB 37 | 59.9 | B,D | J | | | | | | | | | | | 861 | D | J | |
| PCB 38 | | | | | | | | | | | | | | 96.4 | D,G | J | |
| PCB 39 | | | | | | | | | | | | | | | | | |
| PCB 40 | 56.1 | D | | | | | | | | | | | | 769 | D | M | |
| PCB 41/64/71/72 | 251 | B,D | J | | | | 207 | B,D | J | | 2680 | B,D | J | 3810 | D | M | 34.8 |
| PCB 42/59 | 74.8 | D | J | | | | | | | | 906 | B,D | J | 1260 | D | M | 32.7 |
| PCB 43/49 | 224 | B,D | J | | | | 203 | B,D | J | | 2500 | B,D | J | 3640 | D | J | 37.1 |
| PCB 44 | 234 | B,D | J | | | | 251 | B,D | J | | 3440 | B,D | J | 4830 | D | M | 33.6 |
| PCB 45 | 45.5 | D | | | | | | | | | | | | 557 | D | J | |
| PCB 46 | 20.0 | D,G | | | | | | | | | 196 | D,G | | 301 | D | J | 42.3 |
| PCB 47 | 85.7 | B,D | J | | | | | | | | | | | | | | |
| PCB 48/75 | 45.7 | B,D | | | | | | | | | | | | 694 | D | M | |
| PCB 50 | | | | | | | | | | | | | | | | | |
| PCB 51 | 20.2 | D,G | | | | | | | | | | | | 244 | D | J | |
| PCB 52/69 | 459 | B,D | J | | | | 362 | B,D | J | | 5110 | B,D | J | 7500 | D | J | 37.9 |
| PCB 53 | 46.5 | D | | | | | 53.7 | D | J | | | | | 658 | D | J | |
| PCB 54 | | | | | | | | | | | | | | | | | |
| PCB 55 | 10.6 | D,G | | | | | | | | | 85.3 | D,G | | 186 | D,G | M | 74.2 |
| PCB 56/60 | 188 | B,D | J | | | | 128 | B,D | | | 2050 | B,D | J | 3160 | D | M | 42.6 |
| PCB 57 | | | | | | | | | | | | | | | | | 200.0 |
| PCB 58 | | | | | | | | | | | | | | | | | |
| PCB 61/70 | 446 | B,D | J | | | | 296 | B,D | | | 4930 | B,D | J | 7940 | D | M | 46.8 |
| PCB 62 | | | | | | | | | | | | | | | | | |
| PCB 63 | 12.2 | D,G | | | | | 12.3 | D,G | | | 147 | D,G | | 214 | D,G | M | 37.1 |
| PCB 65 | | | | | | | | | | | | | | | | | |
| PCB 67 | 7.72 | D,G | | | | | | | | | 81.1 | D,G | | 115 | D,G | M | 34.6 |
| PCB 68 | | | | | | | | | | | | | | | | | |
| PCB 73 | | | | | | | | | | | | | | | | | |
| PCB 74 | 137 | B,D | J | 46.3 | D | J | 96.8 | D | | 70.6 | 1500 | B,D | J | 2180 | D | M | 37.0 |

| Analyte Identified | PR1WWDUP-02B Whole Water[b] (pg/L) | LQ[c] | VQ | PR1LDDUP-02B LSM Dissolved[b] (pg/L) | LQ[c] | VQ | PR1HDDUP-02B HSM Dissolved[b] (pg/L) | LQ[c] | VQ | % RPD | PR1LPDUP-02B LSM Particulate[b] (pg/g) | LQ[c] | VQ | PR1HPDUP-02B HSM Particulate[b] (pg/g) | LQ[c] | VQ | % RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PCB 76/66 | 302 | B,D | J | | | | 213 | D | | | 3220 | B,D | J | 5000 | D | M | 43.3 |
| PCB 77 | 44.7 | B,D | | | | | | | | | | | | 1010 | D | M | |
| PCB 78 | | | | | | | | | | | | | | | | | |
| PCB 79 | 11.7 | B,D,G | | | | | | | | | | | | 253 | D | M | |
| PCB 80 | | | | | | | | | | | | | | | | | |
| PCB 81 | 7.36 | D,G | | | | | | | | | | | | 113 | D,G | M | |
| PCB 82 | 107 | D | J | | | | 70.6 | D | | | | | | 2690 | D | J | |
| PCB 83 | | | | | | | | | | | | | | | | | |
| PCB 84/92 | 380 | B,D | J | | | | 208 | B,D | | | | | | 8250 | D | J | |
| PCB 85/116 | 92.8 | D | J | | | | 58.6 | D | | | 1360 | D | J | 2560 | D | J | 61.2 |
| PCB 86 | | | | | | | | | | | | | | | | | |
| PCB 87/117/125 | 388 | B,D | J | | | | 195 | D | | | 3710 | D | J | 7820 | D | J | 71.3 |
| PCB 88/91 | 108 | D | J | | | | 61.1 | D | J | | 1210 | D | J | 2190 | D | J | 57.6 |
| PCB 89 | 9.48 | D,G | | | | | | | | | | | | | | | |
| PCB 90/101 | 920 | B,D | J | | | | 488 | B,D | | | 10300 | B,D | J | 20100 | D | J | |
| PCB 93 | | | | | | | | | | | | | | | | | |
| PCB 94 | | | | | | | | | | | | | | | | | |
| PCB 95/98/102 | 677 | B,D | J | | | | | | | | 7250 | B,D | J | 12300 | D | J | 51.7 |
| PCB 96 | | | | | | | | | | | | | | 118 | D,G | J | |
| PCB 97 | 299 | D | J | | | | 151 | D | | | | | | 6100 | D | J | |
| PCB 99 | 341 | B,D | J | | | | 185 | D | | | 3690 | D | J | 7950 | D | J | 73.2 |
| PCB 100 | | | | | | | | | | | | | | | | | |
| PCB 103 | | | | | | | 4.69 | D,G | J | | | | | | | | |
| PCB 104 | | | | | | | | | | | | | | | | | |
| PCB 105 | 355 | D | J | | | | 182 | D | | | | | | 8120 | D | J | |
| PCB 106/118 | 821 | B,D | J | | | | 405 | B,D | | | 9100 | B,D | J | 21000 | D | J | 79.1 |
| PCB 107/109 | 40.7 | D | | 15.8 | D,G | | | | | | 592 | D | J | 1020 | D | J | 53.1 |
| PCB 108/112 | 41.0 | D | J | 14.9 | D,G | | 24.9 | D | | 50.3 | 441 | D | | 893 | D | J | 67.8 |
| PCB 110 | 859 | B,D | J | | | | 457 | B,D | | | | | | 19900 | D | J | |
| PCB 111/115 | 18.9 | D,G | J | | | | | | | | 241 | D,G | | 314 | D | J | 26.3 |
| PCB 113 | | | | | | | | | | | | | | | | | |
| PCB 114 | 20.4 | D,G | J | | | | | | | | 208 | D,G | | 459 | D | J | 75.3 |
| PCB 119 | 14.8 | D,G | J | | | | | | | | 139 | D,G | | 323 | D | J | 79.7 |
| PCB 120 | | | | | | | | | | | | | | | | | |
| PCB 121 | | | | | | | | | | | | | | | | | |
| PCB 122 | | | | | | | | | | | 114 | D,G | | | | | |
| PCB 123 | | | | | | | | | | | 189 | D,G | | 322 | D | J | 52.1 |
| PCB 124 | 37.1 | D | | 12.5 | D,G | | | | | | 446 | D | | 969 | D | J | 73.9 |
| PCB 126 | 10.3 | D,G | | | | | | | | | | | | 278 | D | J | |
| PCB 127 | | | | | | | | | | | | | | | | | |
| PCB 128/162 | 184 | B,D | J | | | | 81.6 | D | | | | | | 5050 | D | J | |
| PCB 129 | 67.1 | B,D | J | | | | 27.8 | D | | | | | | 1670 | D | J | |
| PCB 130 | 48.8 | B,D | J | | | | | | | | | | | 1600 | D | J | |
| PCB 131 | | | | | | | | | | | | | | | | | |
| PCB 132/161 | 274 | B,D | J | | | | 128 | D | | | | | | 7060 | D | J | |
| PCB 133/142 | 28.6 | D | | | | | 14.8 | D,G | | | | | | 775 | D | J | |
| PCB 134/143 | 64.2 | D | J | | | | 32.1 | D | | | | | | 1540 | D | J | |
| PCB 135 | 96.2 | D | J | | | | 43.5 | D | | | | | | 1990 | D | J | |
| PCB 136 | 84.3 | D | J | | | | 40.0 | D | | | | | | 1990 | D | J | |
| PCB 137 | 37.1 | D | | | | | | | | | | | | 1300 | D | J | |
| PCB 138/163/164 | 922 | B,D | J | | | | 426 | B,D | | | | | | 24300 | D | J | |
| PCB 139/149 | 601 | D | J | | | | 249 | B,D | | | | | | 13200 | D | J | |
| PCB 140 | | | | | | | | | | | | | | | | | |
| PCB 141 | 170 | B,D | J | | | | 83.0 | D | | | | | | 4540 | D | J | |
| PCB 144 | 29.9 | D | | | | | 16.6 | D,G | | | 349 | D | | 676 | D | J | |
| PCB 145 | | | | | | | | | | | | | | | | | |
| PCB 146/165 | 102 | D | J | | | | 51.7 | D | | | | | | 2530 | D | J | |
| PCB 147 | | | | | | | 6.66 | D,G | | | 199 | D,G | | 297 | D | J | |
| PCB 148 | | | | | | | | | | | | | | | | | |
| PCB 150 | | | | | | | | | | | | | | | | | |
| PCB 151 | 138 | D | J | | | | | | | | 1440 | D | J | 3120 | D | J | 73.7 |

| Analyte Identified | PR1WWDUP-02B Whole Water[b] (pg/L) | LQ[c] | VQ | PR1LDDUP-02B LSM Dissolved[b] (pg/L) | LQ[c] | VQ | PR1HDDUP-02B HSM Dissolved[b] (pg/L) | LQ[c] | VQ | % RPD | PR1LPDUP-02B LSM Particulate[b] (pg/g) | LQ[c] | VQ | PR1HPDUP-02B HSM Particulate[b] (pg/g) | LQ[c] | VQ | % RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PCB 152 | | | | | | | | | | | | | | | | | |
| PCB 153 | 690 | B,D | J | | | | 346 | B,D | | | | | | 18200 | D | J | |
| PCB 154 | | | | | | | | | | | 97.4 | D,G | | 142 | D,G | J | 37.3 |
| PCB 155 | 8.66 | D,G | | | | | 10.5 | D,G | | | | | | | | | |
| PCB 156 | 106 | B,D | J | | | | 44.1 | D | | | | | | 3050 | D | J | |
| PCB 157 | 22.3 | B,D | | | | | | | | | | | | 711 | D | J | |
| PCB 158/160 | 118 | B,D | J | | | | 53.5 | D | | | | | | 3050 | D | J | |
| PCB 159 | | | | | | | | | | | | | | | | | |
| PCB 166 | | | | | | | | | | | | | | | | | |
| PCB 167 | 39.2 | B,D | J | | | | 20.3 | D,G | | | | | | 1300 | D | J | |
| PCB 168 | | | | | | | | | | | | | | | | | |
| PCB 169 | | | | | | | | | | | | | | | | | |
| PCB 170 | 162 | B,D | J | | | | 101 | D | | | | | | 5170 | D | J | |
| PCB 171 | 48.0 | D | J | | | | | | | | | | | 1360 | D | J | |
| PCB 172 | 25.5 | D | | | | | | | | | | | | 773 | D | J | |
| PCB 173 | | | | | | | | | | | | | | 143 | D,G | J | |
| PCB 174 | 181 | D | J | | | | 102 | D | | | | | | 4970 | D | J | |
| PCB 175 | | | | | | | | | | | | | | 216 | D,G | J | |
| PCB 176 | 18.6 | D,G | | 7.51 | D,G | | 10.3 | D,G | | 31.3 | 202 | D,G | | 547 | D | J | 92.1 |
| PCB 177 | 108 | B,D | J | | | | 48.9 | D | | | | | | 3020 | D | J | |
| PCB 178 | 25.4 | D | J | | | | | | | | | | | 936 | D | J | |
| PCB 179 | 73.8 | D | J | | | | | | | | 685 | D | J | 1920 | D | J | 94.8 |
| PCB 180 | 396 | B,D | J | | | | | | | | | | | 11500 | D | J | |
| PCB 181 | | | | | | | | | | | | | | | | | |
| PCB 182/187 | 163 | B,D | J | | | | | | | | | | | 5030 | D | J | |
| PCB 183 | 79.1 | D | J | | | | | | | | | | | 2290 | D | J | |
| PCB 184 | 13.6 | D,G | | 7.16 | D,G | | 16.5 | D,G | | 79.0 | 124 | D,G | | 209 | D,G | J | 51.1 |
| PCB 185 | 18.9 | D,G | | | | | 13.7 | D,G | | | 207 | D,G | | 532 | D | J | 88.0 |
| PCB 186 | | | | | | | | | | | | | | | | | |
| PCB 188 | | | | | | | | | | | | | | | | | |
| PCB 189 | | | | | | | | | | | | | | 251 | D | J | |
| PCB 190 | 37.7 | D | J | 12.3 | D,G | | 19.7 | D,G | | 46.3 | 378 | D | | 1010 | D | J | 91.1 |
| PCB 191 | | | | | | | | | | | 93.0 | D,G | | 172 | D,G | J | 59.6 |
| PCB 192 | | | | | | | | | | | | | | | | | |
| PCB 193 | 21.0 | D | J | | | | | | | | 198 | D,G | | 484 | D | J | 83.9 |
| PCB 194 | 80.4 | D | J | | | | | | | | 906 | B,D | J | 2420 | D | J | 91.0 |
| PCB 195 | 29.4 | D | J | 10.2 | D,G | J | | | | | 342 | D | J | 1050 | D | J | 101.7 |
| PCB 196/203 | 69.5 | D | J | | | | | | | | | | | 2080 | D | J | |
| PCB 197 | | | | | | | | | | | | | | | | | |
| PCB 198 | 7.75 | D,G | | | | | | | | | | | | | | | |
| PCB 199 | 87.0 | B,D | J | | | | | | | | 736 | D | J | 2110 | D | J | 96.6 |
| PCB 200 | 9.54 | D,G | | | | | | | | | 112 | D,G | | 292 | D | J | 89.1 |
| PCB 201 | | | | | | | | | | | 110 | D,G | Z | 287 | D | J | 89.2 |
| PCB 202 | 18.6 | D,G | | | | | | | | | 193 | D,G | | 587 | D | J | 101.0 |
| PCB 204 | | | | | | | | | | | | | | | | | |
| PCB 205 | | | | | | | | | | | | | | | | | |
| PCB 206 | 61.0 | B,D | J | | | | | | | | | | | 2110 | D | J | |
| PCB 207 | | | | | | | | | | | 77.0 | D,G | J | | | | |
| PCB 208 | 17.7 | D,G | | | | | | | | | 192 | D,G | J | 621 | D | J | 105.5 |
| PCB 209 | 29.6 | B,D,G | J | | | | | | | | | | | 1380 | D | J | |

COPCs/COPECs listed in the FFS: PCB -77, PCB -81, PCB -105, PCB -114, PCB -118, PCB -123, PCB -126, PCB -156, PCB -157, PCB -167, PCB -169, and PCB -189.

[a] Positive target analyte identification and concentration comparison chart will comprise the detected analytes from the full Target Analyte List. Additional pages may be necessary.

[b] No rejected data.

[c] A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate. Values associated with a "G" qualifier are quantitatiovely less certain than those not associated with a "G" qualifier. This is because "G" qualified results fall below the low point of the calibration curve.

Notes:

COPCs = contaminants of potential concern
COPECs = contaminants of potential ecological concern
FFS = focused fesability study
HSM = high-solids mass
LSM = low-solids mass
LQ = laboratory qualifier - See Attachment 1 for definitions
PCB = polychlorinated biphenyl
pg/g = picograms per gram
pg/L = picograms per liter
RPD = relative percent difference
VQ = validation qualifier - See Attachment 2 for definitions
% = percent

# Appendix C

Contingency Samples Used During CSO Phase I Sampling Events

**Contingency Samples Used During the CSO Phase I Sampling Events**

| SDG# | Contingency Sample Bottles Used | Sample Type | Reason for Contingency | | | | Notes |
|---|---|---|---|---|---|---|---|
| | | | Lab Received Broken | Lab Received Outside Temperature | Lost in transit to Lab | Re-analysis Required | |
| PR105 | 1 | WW PCB Congener | ☐ | ☐ | NA | NA | Event 1 Attempt 1 |
| PR105 | 32 | WW Dioxin/Furan | ☐ | ☐ | NA | ☐ | Event 1 Attempt 1 |
| PR107 | 0 | HSM Dissolved Dioxin/Furan | NA | NA | NA | NA | Dioxin analysis 1613B- 1 contingency sample bottle was received broken. No contingency bottle was used in extraction. Event 1 Attempt 1 |
| PR107 | 2 | HSM Dissolved PCB Congener | ☐ | NA | NA | NA | Event 1 Attempt 1 |
| PR134 | 4 | WW Pesticide | NA | NA | ☐ | NA | Event 2 Attempt 2 |
| PR134 | 16 | WW Dioxin/Furan | NA | NA | ☐ | NA | Event 2 Attempt 2 |
| PR134 | 8 | WW PCB Congener | NA | NA | ☐ | NA | Event 2 Attempt 2 |
| PR145 | 4 | WW Dioxin/Furan | ☐ | NA | NA | NA | Event 1 Attempt 3 |

**Notes:**

HSM= High Solids Mass

NA= Not Appicable

SDG = Sample Delivery Group

WW = Whole Water

# Appendix D

CSO/SWO Phase I Field Blank Contamination Results

| CSO/SWO Phase I Field Blank Contamination Results Qualified | | | |
|---|---|---|---|
| | Number of Samples Affected | Number of Results Affected | Percent of the Total Results Affected |
| **HSM Particulate** | | | |
| Semivolatiles | 1 | 2 | 1.0 |
| Organochlorine Pesticides | 4 | 20 | 17.9 |
| Semivolatiles SIM | 2 | 8 | 6.7 |
| Cyanide | 3 | 3 | 75.0 |
| PCDD/PCDFs | 3 | 5 | 4.9 |
| PCB Congeners | 3 | 22 | 2.2 |
| Chlorinated Herbicide | 6 | 10 | 42.0 |
| **HSM Dissolved** | | | |
| Semivolatiles | 3 | 4 | 2.0 |
| Organochlorine Pesticides | 4 | 32 | 28.6 |
| Semivolatiles SIM | 4 | 35 | 29.2 |
| PCDD/PCDFs | 2 | 9 | 8.8 |
| PCB Congeners | 6 | 305 | 30.3 |
| Chlorinated Herbicide | 2 | 7 | 29.2 |
| TOC | 2 | 2 | 50.0 |
| TEPH | 2 | 2 | 50.0 |
| TSS | 2 | 2 | 25.0 |
| TDS | 2 | 2 | 25.0 |
| **LSM Particulate** | | | |
| Semivolatiles | 3 | 5 | 2.5 |
| Organochlorine Pesticides | 4 | 33 | 29.5 |
| Semivolatiles SIM | 4 | 28 | 23.3 |
| PCDD/PCDFs | 3 | 8 | 7.8 |
| PCB Congeners | 6 | 275 | 27.3 |
| **LSM Dissolved** | | | |
| Semivolatiles | 3 | 4 | 2.0 |
| Organochlorine Pesticides | 4 | 30 | 26.8 |
| Semivolatiles SIM | 4 | 26 | 21.7 |
| PCDD/PCDFs | 4 | 10 | 9.8 |
| PCB Congeners | 6 | 366 | 36.3 |
| Chlorinated Herbicide | 4 | 9 | 37.5 |
| DOC | 4 | 4 | 100.0 |
| **Whole Water** | | | |
| Semivolatiles | 4 | 4 | 2.0 |
| Organochlorine Pesticide | 4 | 29 | 25.9 |
| Semivolatiles SIM | 3 | 23 | 19.2 |
| Metals | 4 | 6 | 6.5 |
| Cyanide | 2 | 2 | 50.0 |
| PCDD/PCDFs | 2 | 7 | 6.9 |
| PCB Congeners | 5 | 123 | 12.2 |
| Chlorinated Herbicide | 4 | 7 | 29.2 |
| TOC | 2 | 2 | 50.0 |
| TDS | 2 | 2 | 50.0 |
| **Grab Water Dissolved** | | | |
| Metals | 4 | 8 | 8.7 |

**Notes:**

CSO/SWO = combined sewer overflow/stormwater outfall
DOC = dissolved organic carbon
HSM = high-solids mass
LSM = low-solids mass
PCB = polychlorinated biphenyl
SIM = selective ion monitoring
TDS = total dissolved solids
TEPH = total extractable petroleum hydrocarbons
TOC = total organic carbon
TSS = total suspended solids

# Appendix E

Field Blank Results Assessment

## Appendix E – Field Blank Results Assessment

### 1. Polychlorinated Dibenzo-p-dioxins/Polychlorinated Dibenzofurans

**Table 1**
**PCDD/PCDF[1] – COPCs/COPECs Analytes Impacted by Field Blank Concentrations by Collection Method for Event #2, Attempt #2**

| | PR1CSOCLY**-02B | | | PR1**DUP-02B | | |
|---|---|---|---|---|---|---|
| | WW | LSM[2] | HSM[3] | WW | LSM[2] | HSM[3] |
| Detections Reported by Laboratory | 10 | 8 | 15 | 12 | 14 | 16 |
| Detections Impacted by Field Blank[4] | 3 | 4 | 1 | 4 | 3 | 1 |
| Usable Results[5] | 7 | 4 | 14 | 8 | 11 | 15 |

**Notes:**
1. Validation Guidance – USEPA Region 2 SOP HW-25, Rev. 3, 2006
2. LSM dissolved plus LSM particulate
3. HSM dissolved plus HSM particulate
4. Identified field blank contamination leading to positive results qualified as non-detect.
5. Based on Worksheet #11

The final recommended PCDD/PCDF sample collection method (HSM) was not impacted by the field blank concentrations during the Event #2, Attempt #2 for either the primary or duplicate sample.

**Table 2**
**PCDD/PCDF[1] – COPCs/COPECs Analytes Impacted by Field Blank Concentrations by Collection Method for Event #1, Attempt #3**

| | PR1CSOCLY**-01C | | | PR1**DUP-01C | | |
|---|---|---|---|---|---|---|
| | WW | LSM[2] | HSM[3] | WW | LSM[2] | HSM[3] |
| Detections Reported by Laboratory | 14 | 15 | 16 | 13 | 15 | 15 |
| Detections Impacted by Field Blank[4] | 0 | 0 | 1 | 0 | 0 | 0 |
| Usable Results[5] | 14 | 15 | 15 | 13 | 15 | 15 |

**Notes:**
1. Validation Guidance – USEPA Region 2 SOP HW-25, Rev. 2, 2006
2. LSM dissolved plus LSM particulate
3. HSM dissolved plus HSM particulate
4. Identified field blank contamination leading to positive results qualified as non-detect.
5. Based on Worksheet #11

The final recommended PCDD/PCDF sample collection method was not impacted by the field blank concentrations during the Event #1, Attempt #3 primary sample (inconclusive) or duplicate sample (LSM/HSM).

## 2. Polychlorinated Biphenyl Congeners

**Table 3**
**PCB Congeners[1] – COPCs/COPECs Analytes Impacted by Field Blank Concentrations by Collection Method for Event #2, Attempt #2**

| | PR1CSOCLY**-02B | | | PR1**DUP-02B | | |
|---|---|---|---|---|---|---|
| | WW | LSM[2] | HSM[3] | WW | LSM[2] | HSM[3] |
| Detections Reported by Laboratory | 6 | 11 | 9 | 8 | 9 | 10 |
| Detections Impacted by Field Blank[4] | 0 | 4 | 0 | 1 | 1 | 1 |
| Usable Results[5] | 6 | 7 | 9 | 7 | 8 | 9 |

**Notes:**
1. Validation Guidance-EDS SOP: Congener PCB, Rev. 3, July 2010
2. LSM dissolved plus LSM particulate
3. HSM dissolved plus HSM particulate
4. Identified field blank contamination leading to positive results qualified as non-detect.
5. Based on Worksheet #11

The final recommended PCB congener sample collection method (HSM) was not impacted by the field blank concentrations during the Event #2, Attempt #2 for the duplicate sample. The number of positive COPCs/COPECs reported (as well as overall target analytes detected) is significantly higher in the HSM duplicate sample than the other sample collection methods with and without qualification for associated field blank concentrations. However, the field blank detections associated with the primary sample impacted the final recommended sample collection method (HSM) as indicated in the table above.

**Table 4**
**PCB Congeners[1] – COPCs/COPECs Analytes Impacted by Field Blank Concentrations by Collection Method for Event #1, Attempt #3**

| | PR1CSOLLY**-01C | | | PR1**DUP-01C | | |
|---|---|---|---|---|---|---|
| | WW | LSM[2] | HSM[3] | WW | LSM[2] | HSM[3] |
| Detections Reported by Laboratory | 7 | 8 | 9 | 7 | 6 | 9 |
| Detections Impacted by Field Blank[4] | 1 | 0 | 0 | 1 | 1 | 0 |
| Usable Results[5] | 6 | 8 | 9 | 6 | 5 | 9 |

**Notes:**
1. Validation Guidance-EDS SOP: Congener PCB, Rev. 3, July 2010
2. LSM dissolved plus LSM particulate
3. HSM dissolved plus HSM particulate
4. Identified field blank contamination leading to positive results qualified as non-detect.
5. Based on Worksheet #11

The final PCB congener recommended sample collection method (HSM) was not impacted by the field blank concentrations during the Event #1, Attempt #3 in either the primary or duplicate sample.

## 3. Aroclor Polychlorinated Biphenyls

No field blank concentrations were present. Field blank results did not impact any positive result reported during Phase I for the Aroclor PCBs for LSM, HSM, or whole water collection methods.

## 4. Organochlorine Pesticides

**Table 5**
**Organochlorine Pesticides[1] – COPCs/COPECs Analytes Impacted by Field Blank Concentrations by Collection Method for Event #1, Attempt #2**

| | PR1CSOCLY**-01B | | | PR1**DUP-01B | | |
|---|---|---|---|---|---|---|
| | WW | LSM[2] | HSM[3] | WW | LSM[2] | HSM[3] |
| Detections Reported by Laboratory | 6 | 6 | N/A | 6 | 6 | 6 |
| Detections Impacted by Field Blank[4] | 3 | 3 | 1 | 3 | 3 | 1 |
| Usable Results[5] | 3 | 3 | N/A | 3 | 3 | 5 |

**Notes:**
1. Validation Guidance – EDS SOP: Organochlorine Pesticides by HRGC/HRMS USEPA 1699, Rev. 0 7/10
2. LSM dissolved plus LSM particulate
3. HSM dissolved plus HSM particulate
4. Identified field blank contamination leading to positive results qualified as non-detect.
5. Based on Worksheet #11

N/A = not applicable; sample was eliminated from further evaluation during Step 2, because less than 90% usable data were obtained

The final organochlorine pesticide recommended sample collection method (inconclusive) was not impacted by the field blank concentrations during Event #1, Attempt #2 in the primary sample. However, the field blank concentrations associated with the duplicate sample for COPCs/COPECs impacted the final recommended sample collection method (HSM) as indicated in the table above.

**Table 6**
**Organochlorine Pesticides[1] – COPCs/COPECs Analytes Impacted by Field Blank Concentrations by Collection Method for Event #2, Attempt #2**

| | PR1CSOCLY**-02B | | | PR1**DUP-02B | | |
|---|---|---|---|---|---|---|
| | WW | LSM[2] | HSM[3] | WW | LSM[2] | HSM[3] |
| Detections Reported by Laboratory | 6 | 6 | 6 | 6 | 6 | 6 |
| Detections Impacted by Field Blank[4] | 3 | 3 | 2 | 3 | 3 | 3 |
| Usable Results[5] | 3 | 3 | 4 | 3 | 3 | 3 |

**Notes:**
1. Validation Guidance – EDS SOP: Organochlorine Pesticides by HRGC/HRMS USEPA 1699, Rev. 0 7/10
2. LSM dissolved plus LSM particulate
3. HSM dissolved plus HSM particulate
4. Identified field blank contamination leading to positive results qualified as non-detect.
5. Based on Worksheet #11

The final recommended organochlorine pesticide sample collection method (inconclusive) was not impacted by the field blank concentrations during Event #2, Attempt #2 for the duplicate sample. However, the field blank concentrations associated with the primary sample for COPCs/COPECs impacted the final recommended sample collection method (HSM) as indicated in the table above.

## 5. Semivolatile Organic Compounds

There are no COPC/COPECs in the target list for SVOCs. Therefore, the following tables compare the analytes affected by the field blank results with the Target Analyte List (TAL).

**Table 7**
**SVOCs[1] – Target Analytes Impacted by Field Blank Concentrations by Collection Method for Event #1, Attempt #2**

| | PR1CSOCLY**-01B | | | PR1**DUP-01B | | |
|---|---|---|---|---|---|---|
| | WW | LSM[2] | HSM[3] | WW | LSM[2] | HSM[3] |
| Detections Reported by Laboratory | 5 | N/A | N/A | 5 | 5 | N/A |
| Detections Impacted by Field Blank[4] | 1 | 2 | 0 | 1 | 1 | 0 |
| Usable Results[5] | 4 | N/A | N/A | 4 | 4 | N/A |

**Notes:**
1. Validation Guidance – USEPA Region 2 SOP HW-35, Rev.1, August, 2007
2. LSM dissolved plus LSM particulate
3. HSM dissolved plus HSM particulate
4. Identified field blank contamination leading to positive results qualified as non-detect.
5. Based on Worksheet #11

N/A = not applicable; sample was eliminated from further evaluation during Step 2, because less than 90% usable data were obtained

The final recommended SVOC sample collection method was not impacted by the field blank concentrations during Event #1, Attempt #2 for either the primary (inconclusive) or duplicate sample (inconclusive).

**Table 8**
**SVOCs[1] – Target Analytes Impacted by Field Blank Concentrations by Collection Method for Event #2, Attempt #2**

| | PR1CSOCLY**-02B | | | PR1**DUP-02B | | |
|---|---|---|---|---|---|---|
| | WW | LSM[2] | HSM[3] | WW | LSM[2] | HSM[3] |
| Detections Reported by Laboratory | 5 | 6 | 10 | 5 | 6 | 8 |
| Detections Impacted by Field Blank[4] | 1 | 1 | 0 | 1 | 1 | 0 |
| Usable Results[5] | 4 | 5 | 10 | 4 | 5 | 8 |

**Notes:**
1. Validation Guidance – USEPA Region 2 SOP HW-35, Rev.1, August, 2007
2. LSM dissolved plus LSM particulate
3. HSM dissolved plus HSM particulate
4. Identified field blank contamination leading to positive results qualified as non-detect.
5. Based on Worksheet #11

The final recommended SVOC sample collection method was not impacted by the field blank concentrations during Event #2, Attempt #2 for either the primary (HSM) or duplicate sample (inconclusive).

## 6. Semivolatile Organic Compounds Selective Ion Monitoring

**Table 9**
**SVOCs SIM[1] – COPCs/COPECs Analytes Impacted by Field Blank Concentrations by Collection Method for Event #1, Attempt #2**

| | PR1CSOCLY**-01B | | | PR1**DUP-01B | | |
|---|---|---|---|---|---|---|
| | WW | LSM[2] | HSM[3] | WW | LSM[2] | HSM[3] |
| Detections Reported by Laboratory | 16 | 17 | 16 | 16 | 16 | 15 |
| Detections Impacted by Field Blank[4] | 4 | 7 | 0 | 7 | 5 | 1 |
| Usable Results[5] | 12 | 10 | 16 | 9 | 11 | 14 |

**Notes:**
1. Validation Guidance – USEPA Region 2 SOP HW-35, Rev.1, August, 2007
2. LSM dissolved plus LSM particulate
3. HSM dissolved plus HSM particulate
4. Identified field blank contamination leading to positive results qualified as non-detect.
5. Based on Worksheet #11

The final recommended SVOC SIM sample collection method was impacted by the field blank concentrations during Event #1, Attempt #2 for both the primary (HSM) and duplicate samples (HSM).

**Table 10**
**SVOC SIM[1] – COPCs/COPECs Analytes Impacted by Field Blank Concentrations by Collection Method for Event #2, Attempt #2**

| | PR1CSOCLY**-02B | | | PR1**DUP-02B | | |
|---|---|---|---|---|---|---|
| | WW | LSM[2] | HSM[3] | WW | LSM[2] | HSM[3] |
| Detections Reported by Laboratory | 16 | 17 | 17 | 17 | 17 | 17 |
| Detections Impacted by Field Blank[4] | 1 | 1 | 0 | 0 | 1 | 0 |
| Usable Results[5] | 15 | 16 | 17 | 17 | 16 | 17 |

Notes:
1. Validation Guidance – USEPA Region 2 SOP HW-35, Rev.1, August, 2007
2. LSM dissolved plus LSM particulate
3. HSM dissolved plus HSM particulate
4. Identified field blank contamination leading to positive results qualified as non-detect.
5. Based on Worksheet #11

The final recommended SVOC SIM sample collection method was not impacted by field blank concentrations during Event #2, Attempt #2 for either the primary (inconclusive) or duplicate samples (inconclusive).

## 7. Chlorinated Herbicides

There are no COPC/COPECs in the target list for chlorinated herbicides. Therefore, the following tables compare the analytes affected by the field blank results with the chlorinated herbicide TAL.

**Table 11**
**Chlorinated Herbicides[1] – Target Analytes Impacted by Field Blank Concentrations by Collection Method for Event #1, Attempt #2**

| | PR1CSOCLY**-01B | | | PR1**DUP-01B | | |
|---|---|---|---|---|---|---|
| | WW | LSM[2] | HSM[3] | WW | LSM[2] | HSM[3] |
| Detections Reported by Laboratory | 1 | 4 | 3 | 0 | 3 | 3 |
| Detections Impacted by Field Blank[4] | 1 | 2 | 2 | 0 | 2 | 2 |
| Usable Results[5] | 0 | 2 | 1 | 0 | 1 | 1 |

Notes:
1. Validation Guidance – USEPA Region 2 SOP HW-17, Rev.3, July, 2008
2. LSM dissolved plus LSM particulate
3. HSM dissolved plus HSM particulate
4. Identified field blank contamination leading to positive results qualified as non-detect.
5. Based on Worksheet #11

The final recommended chlorinated herbicide sample collection method was not impacted by field blank concentrations during Event #1, Attempt #2 for either the primary (LSM) or duplicate samples (LSM/HSM).

**Table 12**

**Chlorinated Herbicides[1] – Target Analytes Impacted by Field Blank Concentrations by Collection Method for Event #2, Attempt #2**

| | PR1CSOCLY**-02B | | | PR1**DUP-02B | | |
|---|---|---|---|---|---|---|
| | WW | LSM[2] | HSM[3] | WW | LSM[2] | HSM[3] |
| Detections Reported by Laboratory | 4 | 3 | 4 | 4 | 4 | 4 |
| Detections Impacted by Field Blank[4] | 4 | 3 | 3 | 4 | 2 | 4 |
| Usable Results[5] | 0 | 0 | 1 | 0 | 2 | 0 |

**Notes**:
1. Validation Guidance – USEPA Region 2 SOP HW-17, Rev.3, July, 2008
2. LSM dissolved plus LSM particulate
3. HSM dissolved plus HSM particulate
4. Identified field blank contamination leading to positive results qualified as non-detect.
5. Based on Worksheet #11

The final recommended chlorinated herbicide sample collection method was impacted by field blank concentrations during Event #2, Attempt #2 for both the primary (HSM) and duplicate samples (LSM).

**Table 13**
**Chlorinated Herbicides[1] – Target Analytes Impacted by Field Blank Concentrations by Collection Method for Event #1, Attempt #3**

| | PR1CSOCLY**-01C | | | PR1**DUP-01C | | |
|---|---|---|---|---|---|---|
| | WW | LSM[2] | HSM[3] | WW | LSM[2] | HSM[3] |
| Detections Reported by Laboratory | 4 | 4 | 4 | 4 | 4 | 4 |
| Detections Impacted by Field Blank[4] | 0 | 2 | 0 | 0 | 0 | 1 |
| Usable Results[5] | 4 | 2 | 4 | 4 | 4 | 3 |

**Notes:**
1. Validation Guidance – USEPA Region 2 SOP HW-17, Rev.3, July, 2008
2. LSM dissolved plus LSM particulate
3. HSM dissolved plus HSM particulate
4. Identified field blank contamination leading to positive results qualified as non-detect.
5. Based on worksheet #11

The final recommended chlorinated herbicide sample collection method was impacted by field blank concentrations during Event #1, Attempt #3 for both the primary (HSM/whole water) and duplicate samples (LSM/whole water).

## 8. Cyanide

Cyanide is not a COPC/COPEC. The final recommended sample collection method selected was not impacted by field blank results because no positive results were "U" qualified on that basis. (Validation SOP reference: USEPA Region 2 SOP HW-2, Rev. 13, September, 2006.)

## 9. Volatile Organic Compounds

There are no COPC/COPECs in the TAL for VOCs. Field blank concentrations did not impact any result during Phase I for the VOCs identified in whole water or HSM sample collection methods. The final recommended sample collection method selected for VOCs was not impacted by field blank results.

## 10. Total Extractable Petroleum Hydrocarbons

TEPH is not a COPC/COPEC. Field blank results did not impact any TEPH result during Phase I in either the whole water or HSM sample collection methods. The final recommended sample collection method selected for TEPH was not impacted by field blank results. (Validation SOP reference: EDS SOP: TEPH-01, Rev.3, July, 2007).

# Appendix F

Detailed Evaluation Sheets (Worksheet #11) – PCDDs/PCDFs

**EVENT 2 ORIGINAL SAMPLE - DIOXIN**
**PR1CSOCLY**-02B**

**QAPP Worksheet #11-1**
**Project Quality Objectives/Systematic Planning Process Statements (Phase I)**
**Phase I Data Comparison Chart**

| PCDD/PCDF Sample Collection Techniques | Sample Collection Quality[a] | | | Analytical Quality[b] | Identification of Target Analytes | | |
|---|---|---|---|---|---|---|---|
| | Were specified sample aliquots obtained meeting all analytical needs? | | | Are fewer than 2 results "R" qualified (rejected due to association with severe data quality issues)? | Number of COPCs/COPECs[c] listed in the FFS identified? | Are at least 2 more COPCs/ COPECs[c] identified in another sample type? | If no single sample type being compared was significantly[d] different in the number of COPCs/COPECs[c] identified (distinguished by a single "no" in the previous column), are the overall number of target analytes identified significantly different? |
| | Attempt 1 | Attempt 2 | Attempt 3 | | | | |
| Whole water | No | Yes | NA | Yes | 7 | Yes | NA |
| LSM dissolved plus LSM particulate | No | Yes | NA | Yes | 4 | Yes | NA |
| HSM dissolved plus HSM particulate | No | Yes | NA | Yes | 14 | No | NA |
| LSM dissolved | No | Yes | NA | Yes | 3 | Yes | NA |
| HSM dissolved | No | Yes | NA | Yes | 12 | | NA |
| LSM particulate | No | Yes | NA | Yes | 4 | Yes | NA |
| HSM particulate | No | Yes | NA | Yes | 13 | | NA |

See footnotes on the last page

**Positive Target Analyte Identification and Concentration Comparison[e]**

| Analyte Identified | PR1CSOCLYWW-02B Whole Water[f] (pg/L) | LQ[g] | VQ | PR1CSOCLYLD-02B LSM Dissolved[f] (pg/L) | LQ[g] | VQ | PR1CSOCLYHD-02B HSM Dissolved[f] (pg/L) | LQ[g] | VQ | % RPD | PR1CSOCLYLP-02B LSM Particulate[f] (pg/g) | LQ[g] | VQ | PR1CSOCLYHP-02B HSM Particulate[f] (pg/g) | LQ[g] | VQ | % RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,2,3,4,7,8-HxCDD | 0.801 | G | | | | | 0.606 | G | J | | | | | 6.32 | | J | |
| 1,2,3,6,7,8-HxCDD | 2.56 | G | | | | | 1.79 | G | J | | 156 | G | | 21.1 | | J | **152** |
| 1,2,3,7,8,9-HxCDD | 1.74 | G | J | 0.530 | G | J | 1.22 | G | J | **78.9** | 114 | G | | 15.2 | | J | **153** |
| 1,2,3,4,6,7,8-HpCDD | 84.3 | | J | 11.0 | | J | 38.5 | | J | **111** | 4920 | | | 700 | | J | **150** |
| OCDD | 1090 | | | 73.2 | | J | 338 | | J | **129** | 64000 | | J | 9590 | E | J | **148** |
| 2,3,7,8-TCDF | | | | | | | | | | | | | | 3.82 | | M | |
| 1,2,3,7,8-PeCDF | | | | | | | | | | | | | | 4.41 | G | M | |
| 2,3,4,7,8-PeCDF | 0.537 | G | | | | | 0.288 | G | | | | | | 4.04 | G | M | |
| 1,2,3,4,7,8-HxCDF | | | | | | | 1.23 | G | | | | | | | | | |
| 1,2,3,6,7,8-HxCDF | | | | | | | 1.45 | G | | | | | | 11.7 | | M | |
| 2,3,4,6,7,8-HxCDF | 1.72 | G | | | | | 1.10 | G | | | | | | 10.5 | | M | |
| 1,2,3,4,6,7,8-HpCDF | | | | | | | 17.3 | | J | | | | | 205 | | J | |
| 1,2,3,4,7,8,9-HpCDF | | | | | | | 1.58 | G | | | | | | 13.3 | | J | |
| OCDF | | | | | | | 42.3 | | J | | | | | 444 | | J | |

[a] A "NA" in one of the Attempt columns indicates that the analytical group had already been collected in a previous attempt and was not intended to be collected during that column's attempt.

[b] Analytical quality is based upon the program 90% analytical completeness objectives.

[c] COPCs/COPECs listed in the FFS: 2,3,7,8-TCDD; 1,2,3,7,8-PeCDD; 1,2,3,6,7,8-HxCDD; 1,2,3,4,7,8-HxCDD; 1,2,3,7,8,9-HxCDD; 1,2,3,4,6,7,8-HpCDD; OCDD; 2,3,7,8-TCDF; 1,2,3,7,8-PeCDF; 2,3,4,7,8-PeCDF; 1,2,3,6,7,8-HxCDF; 1,2,3,7,8,9-HxCDF; 1,2,3,4,7,8-HxCDF; 2,3,4,6,7,8-HxCDF; 1,2,3,4,6,7,8-HpCDF; 1,2,3,4,7,8,9-HpCDF; and OCDF.

[d] Fewer than 2

[e] Positive target analyte identification and concentration comparison chart will comprise the detected analytes from the full Target Analyte List. Additional pages may be necessary.

[f] No rejected data.

[g] A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate.
Values associated with a "G" qualifier are quantitatiovely less certain than those not associated with a "G" qualifier. This is because "G" qualified results fall below the low point of the calibration curve.

Notes:

COPCs = contaminants of potential concern
COPECs = contaminants of potential ecological concern
FFS = focused fesability study
HSM = high-solids mass
LSM = low-solids mass
LQ = laboratory qualifier - See Attachment 1 for definitions
PCDD/PCDF = polychlorinated dibenzo-p-dioxin/polychlorinated dibenzofuran
pg/g = picoograms per gram
pg/L = picograms per liter
RPD = relative percent difference
VQ = validation qualifier - See Attachment 2 for definitions
% = percent

**EVENT 2 FIELD DUPLICATE - DIOXIN**
**PR1**DUP-02B**

**QAPP Worksheet #11-1**
**Project Quality Objectives/Systematic Planning Process Statements (Phase I)**
**Phase I Data Comparison Chart**

| PCDD/PCDF Sample Collection Techniques | Sample Collection Quality[a] | | | Analytical Quality[b] | Identification of Target Analytes | | |
|---|---|---|---|---|---|---|---|
| | Were specified sample aliquots obtained meeting all analytical needs? | | | Are fewer than 2 results "R" qualified (rejected due to association with severe data quality issues)? | Number of COPCs/COPECs[c] listed in the FFS identified? | Are at least 2 more COPCs/ COPECs[c] identified in another sample type? | If no single sample type being compared was significantly[d] different in the number of COPCs/COPECs[c] identified (distinguished by a single "no" in the previous column), are the overall number of target analytes identified significantly different? |
| | Attempt 1 | Attempt 2 | Attempt 3 | | | | |
| Whole water | No | Yes | NA | Yes | 8 | Yes | NA |
| LSM dissolved plus LSM particulate | No | Yes | NA | Yes | 11 | Yes | NA |
| HSM dissolved plus HSM particulate | No | Yes | NA | Yes | 15 | No | NA |
| LSM dissolved | No | Yes | NA | Yes | 5 | Yes | NA |
| HSM dissolved | No | Yes | NA | Yes | 10 | | NA |
| LSM particulate | No | Yes | NA | Yes | 9 | Yes | NA |
| HSM particulate | No | Yes | NA | Yes | 14 | | NA |

See footnotes on the last page

**Positive Target Analyte Identification and Concentration Comparison[e]**

| Analyte Identified | PR1WWDUP-02B Whole Water[f] (pg/L) | LQ[g] | VQ | PR1LDDUP-02B LSM Dissolved[f] (pg/L) | LQ[g] | VQ | PR1HDDUP-02B HSM Dissolved[f] (pg/L) | LQ[g] | VQ | % RPD | PR1LPDUP-02B LSM Particulate[f] (pg/g) | LQ[g] | VQ | PR1HPDUP-02B HSM Particulate[f] (pg/g) | LQ[g] | VQ | % RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,2,3,7,8-PeCDD | | | | | | | | | | | 18.1 | G | | 3.98 | G | J | **128** |
| 1,2,3,4,7,8-HxCDD | 0.893 | G | J | 0.535 | G | J | 0.505 | G | J | **5.77** | | | | 6.16 | | J | |
| 1,2,3,6,7,8-HxCDD | 2.76 | | J | 0.548 | G | J | | | | | 106 | G | | 19.8 | | J | **137** |
| 1,2,3,7,8,9-HxCDD | 1.94 | G | J | | | | 1.35 | G | J | | 81.8 | G | | 14.2 | | J | **141** |
| 1,2,3,4,6,7,8-HpCDD | 87.4 | | J | 8.92 | | J | 30.5 | | J | **109** | 3160 | | | 636 | | J | **133** |
| OCDD | 1230 | | J | 64.7 | | J | 199 | | J | **102** | 43100 | | | 9560 | E | J | **127** |
| 2,3,7,8-TCDF | | | | | | | | | | | | | | 2.88 | | M | |
| 1,2,3,7,8-PeCDF | | | | | | | | | | | 11.1 | G | | 4.04 | G | M | **93.3** |
| 2,3,4,7,8-PeCDF | | | | | | | | | | | 11.8 | G | | 4.23 | G | M | **94.4** |
| 1,2,3,4,7,8-HxCDF | | | | | | | 0.959 | G | | | | | | | | | |
| 1,2,3,6,7,8-HxCDF | 2.11 | G | | | | | 1.08 | G | | | 61.9 | G | | 11.1 | | M | **139** |
| 2,3,4,6,7,8-HxCDF | 1.94 | G | | | | | 0.962 | G | | | 74.6 | G | | 7.89 | | M | **162** |
| 1,2,3,4,6,7,8-HpCDF | | | | | | | 13.4 | | J | | | | | 197 | | J | |
| 1,2,3,4,7,8,9-HpCDF | 2.61 | | | 0.515 | G | J | 1.20 | G | | **79.9** | | | | 12.5 | | J | |
| OCDF | | | | | | | 32.5 | | J | | | | | 458 | | J | |

[a] A "NA" in one of the Attempt columns indicates that the analytical group had already been collected in a previous attempt and was not intended to be collected during that column's attempt.

[b] Analytical quality is based upon the program 90% analytical completeness objectives.

[c] COPCs/COPECs listed in the FFS: 2,3,7,8-TCDD; 1,2,3,7,8-PeCDD; 1,2,3,6,7,8-HxCDD; 1,2,3,4,7,8-HxCDD; 1,2,3,7,8,9-HxCDD; 1,2,3,4,6,7,8-HpCDD; OCDD; 2,3,7,8-TCDF; 1,2,3,7,8-PeCDF; 2,3,4,7,8-PeCDF; 1,2,3,6,7,8-HxCDF; 1,2,3,7,8,9-HxCDF; 1,2,3,4,7,8-HxCDF; 2,3,4,6,7,8-HxCDF; 1,2,3,4,6,7,8-HpCDF; 1,2,3,4,7,8,9-HpCDF; and OCDF.

[d] Fewer than 2

[e] Positive target analyte identification and concentration comparison chart will comprise the detected analytes from the full Target Analyte List. Additional pages may be necessary.

[f] No rejected data.

[g] A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate. Values associated with a "G" qualifier are quantitatiovely less certain than those not associated with a "G" qualifier. This is because "G" qualified results fall below the low point of the calibration curve.

Notes:

COPCs = contaminants of potential concern
COPECs = contaminants of potential ecological concern
FFS = focused fesability study
HSM = high-solids mass
LSM = low-solids mass
LQ = laboratory qualifier - See Attachment 1 for definitions
PCDD/PCDF = polychlorinated dibenzo-p-dioxin/polychlorinated dibenzofuran
pg/g = picoograms per gram
pg/L = picograms per liter
RPD = relative percent difference
VQ = validation qualifier - See Attachment 2 for definitions
% = percent

**EVENT 1 ATTEMPT 3 ORIGINAL SAMPLE - DIOXIN**
**PR1CSOCLY**-01C**

**QAPP Worksheet #11-1**
**Project Quality Objectives/Systematic Planning Process Statements (Phase I)**
**Phase I Data Comparison Chart**

| PCDD/PCDF Sample Collection Techniques | Sample Collection Quality[a] | | | Analytical Quality[b] | Identification of Target Analytes | | |
|---|---|---|---|---|---|---|---|
| | Were specified sample aliquots obtained meeting all analytical needs? | | | Are fewer than 2 results "R" qualified (rejected due to association with severe data quality issues)? | Number of COPCs/COPECs[c] listed in the FFS identified? | Are at least 2 more COPCs/ COPECs[c] identified in another sample type? | If no single sample type being compared was significantly[d] different in the number of COPCs/COPECs[c] identified (distinguished by a single "no" in the previous column), are the overall number of target analytes identified significantly different? |
| | Attempt 1 | Attempt 2 | Attempt 3 | | | | |
| Whole water | Yes | NA | Yes | Yes | 14 | No | No |
| LSM dissolved plus LSM particulate | Yes | NA | Yes | Yes | 15 | No | No |
| HSM dissolved plus HSM particulate | Yes | NA | Yes | Yes | 15 | No | No |
| LSM dissolved | Yes | NA | Yes | Yes | 6 | Yes | NA |
| HSM dissolved | Yes | NA | Yes | Yes | 12 | | NA |
| LSM particulate | Yes | NA | Yes | Yes | 15 | No | No |
| HSM particulate | Yes | NA | Yes | Yes | 15 | | No |

See footnotes on the last page

**Positive Target Analyte Identification and Concentration Comparison[e]**

| Analyte Identified | PR1CSOCLYWW-01C Whole Water[f] (pg/L) | LQ[g] | VQ | PR1CSOCLYLD-01C LSM Dissolved[f] (pg/L) | LQ[g] | VQ | PR1CSOCLYHD-01C HSM Dissolved[f] (pg/L) | LQ[g] | VQ | % RPD | PR1CSOCLYLP-01C LSM Particulate[f] (pg/g) | LQ[g] | VQ | PR1CSOCLYHP-01C HSM Particulate[f] (pg/g) | LQ[g] | VQ | % RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,2,3,7,8-PeCDD | 0.425 | G | J | | | | | | | | 24.4 | G | | 4.56 | | | **137** |
| 1,2,3,4,7,8-HxCDD | 0.914 | G | | | | | 0.575 | G | J | | 47.7 | G | | 9.01 | | | **136** |
| 1,2,3,6,7,8-HxCDD | 2.58 | | | 0.769 | G | J | 1.42 | G | J | **59.5** | 135 | G | | 24.4 | | | **139** |
| 1,2,3,7,8,9-HxCDD | 2.01 | G | | | | | 1.04 | G | J | | 105 | G | | 17.5 | | | **143** |
| 1,2,3,4,6,7,8-HpCDD | 81.5 | | | 13 | | J | 31.3 | | J | **82.6** | 3750 | | J | 746 | | | **134** |
| OCDD | 1060 | | J | 74.9 | | J | 226 | | J | **100** | 45500 | | J | 12000 | D | | **117** |
| 2,3,7,8-TCDF | | | | | | | 0.0775 | G | | | 18.9 | G | | 3.85 | | | **132** |
| 1,2,3,7,8-PeCDF | 0.304 | G | | | | | 0.131 | G | J | | 12.6 | G | | 3.53 | | | **112** |
| 2,3,4,7,8-PeCDF | 0.85 | G | | | | | | | | | 43.6 | G | | 4.77 | | | **161** |
| 1,2,3,4,7,8-HxCDF | 1.8 | G | | | | | 0.976 | G | J | | 80.8 | G | | 14.9 | | | **138** |
| 1,2,3,6,7,8-HxCDF | 1.81 | G | | 0.56 | G | J | 1.07 | G | J | **62.6** | 92.3 | G | | 13.9 | | | **148** |
| 2,3,4,6,7,8-HxCDF | 1.75 | G | | 0.402 | G | J | 0.924 | G | J | **78.7** | 95.9 | G | | 9.96 | | | **162** |
| 1,2,3,4,6,7,8-HpCDF | 29.1 | | J | 5.81 | | J | 15.3 | | J | **89.9** | 1760 | | | 253 | | | **150** |
| 1,2,3,4,7,8,9-HpCDF | 2.05 | G | | | | | | | | | 105 | G | | 13.8 | | | **154** |
| OCDF | 53.7 | | J | | | | 26.8 | | J | | 3280 | | | 488 | | | **148** |

[a] A "NA" in one of the Attempt columns indicates that the analytical group had already been collected in a previous attempt and was not intended to be collected during that column's attempt.

[b] Analytical quality is based upon the program 90% analytical completeness objectives.

[c] COPCs/COPECs listed in the FFS: 2,3,7,8-TCDD; 1,2,3,7,8-PeCDD; 1,2,3,6,7,8-HxCDD; 1,2,3,4,7,8-HxCDD; 1,2,3,7,8,9-HxCDD; 1,2,3,4,6,7,8-HpCDD; OCDD; 2,3,7,8-TCDF; 1,2,3,7,8-PeCDF; 2,3,4,7,8-PeCDF; 1,2,3,6,7,8-HxCDF; 1,2,3,7,8,9-HxCDF; 1,2,3,4,7,8-HxCDF; 2,3,4,6,7,8-HxCDF; 1,2,3,4,6,7,8-HpCDF; 1,2,3,4,7,8,9-HpCDF; and OCDF.

[d] Fewer than 2

[e] Positive target analyte identification and concentration comparison chart will comprise the detected analytes from the full Target Analyte List. Additional pages may be necessary.

[f] No rejected data.

[g] A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate. Values associated with a "G" qualifier are quantitatiovely less certain than those not associated with a "G" qualifier. This is because "G" qualified results fall below the low point of the calibration curve.

Notes:

COPCs = contaminants of potential concern
COPECs = contaminants of potential ecological concern
FFS = focused fesability study
HSM = high-solids mass
LSM = low-solids mass
LQ = laboratory qualifier - See Attachment 1 for definitions

PCDD/PCDF = polychlorinated dibenzo-p-dioxin/polychlorinated dibenzofuran
pg/g = picoograms per gram
pg/L = picograms per liter
RPD = relative percent difference
VQ = validation qualifier - See Attachment 2 for definitions
% = percent

**EVENT 1 ATTEMPT 3 FIELD DUPLICATE - DIOXIN**
**PR1**DUP-01C**

**QAPP Worksheet #11-1**
**Project Quality Objectives/Systematic Planning Process Statements (Phase I)**
**Phase I Data Comparison Chart**

| PCDD/PCDF Sample Collection Techniques | Sample Collection Quality[a] | | | Analytical Quality[b] | Identification of Target Analytes | | |
|---|---|---|---|---|---|---|---|
| | Were specified sample aliquots obtained meeting all analytical needs? | | | Are fewer than 2 results "R" qualified (rejected due to association with severe data quality issues)? | Number of COPCs/COPECs[c] listed in the FFS identified? | Are at least 2 more COPCs/ COPECs[c] identified in another sample type? | If no single sample type being compared was significantly[d] different in the number of COPCs/COPECs[c] identified (distinguished by a single "no" in the previous column), are the overall number of target analytes identified significantly different? |
| | Attempt 1 | Attempt 2 | Attempt 3 | | | | |
| Whole water | Yes | NA | Yes | Yes | 13 | Yes | NA |
| LSM dissolved plus LSM particulate | Yes | NA | Yes | Yes | 15 | No | No |
| HSM dissolved plus HSM particulate | Yes | NA | Yes | Yes | 15 | No | No |
| LSM dissolved | Yes | NA | Yes | Yes | 6 | Yes | NA |
| HSM dissolved | Yes | NA | Yes | Yes | 12 | | NA |
| LSM particulate | Yes | NA | Yes | Yes | 15 | No | No |
| HSM particulate | Yes | NA | Yes | Yes | 15 | | No |

See footnotes on the last page

**Positive Target Analyte Identification and Concentration Comparison**[e]

| Analyte Identified | PR1WWDUP-01C Whole Water[f] (pg/L) | LQ[g] | VQ | PR1LDDUP-01C LSM Dissolved[f] (pg/L) | LQ[g] | VQ | PR1HDDUP-01C HSM Dissolved[f] (pg/L) | LQ[g] | VQ | % RPD | PR1LPDUP-01C LSM Particulate[f] (pg/g) | LQ[g] | VQ | PR1HPDUP-01C HSM Particulate[f] (pg/g) | LQ[g] | VQ | % RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,2,3,7,8-PeCDD | 0.262 | G | | | | | | | | | 59.3 | G | | 4.69 | | | **171** |
| 1,2,3,4,7,8-HxCDD | 0.681 | G | | | | | 0.448 | G | | | 91.2 | G | | 9.24 | | | **163** |
| 1,2,3,6,7,8-HxCDD | 1.81 | G | | 0.652 | G | J | 1.18 | G | | **57.6** | 219 | G | | 25.0 | | | **159** |
| 1,2,3,7,8,9-HxCDD | 1.30 | G | | 0.419 | G | J | 0.834 | G | | **66.2** | 238 | G | | 21.0 | | | **168** |
| 1,2,3,4,6,7,8-HpCDD | 71.1 | | | 10.4 | | J | 29.3 | | J | **95.2** | 7400 | | J | 818 | | | **160** |
| OCDD | 821 | | J | 72.8 | | J | 269 | | J | **115** | 109000 | | J | 11600 | D | | **162** |
| 2,3,7,8-TCDF | | | | | | | 0.0948 | G | | | | | | 3.60 | | | |
| 1,2,3,7,8-PeCDF | | | | | | | | | | | 18.3 | G | | 3.22 | | | **140** |
| 2,3,4,7,8-PeCDF | 0.438 | G | | | | | | | | | 56.9 | G | | 4.21 | | | **172** |
| 1,2,3,4,7,8-HxCDF | 1.34 | G | | 0.412 | G | | 0.893 | G | | **73.7** | 93.4 | G | | 14.4 | | | **147** |
| 1,2,3,6,7,8-HxCDF | 1.32 | G | | | | | 0.885 | G | | | 116 | G | | 14.2 | | | **156** |
| 2,3,4,6,7,8-HxCDF | 1.09 | G | | | | | 0.793 | G | | | 118 | G | | 105 | | | **11.7** |
| 1,2,3,7,8,9-HxCDF | | | | | | | | | | | 19.4 | G | | | | | |
| 1,2,3,4,6,7,8-HpCDF | 20.2 | | J | | | | 13 | | | | 2230 | | | 247 | | | **160** |
| 1,2,3,4,7,8,9-HpCDF | 1.47 | G | | 0.548 | G | J | 1.01 | G | | **59.3** | 123 | G | | 14.4 | | | **158** |
| OCDF | 38 | | J | | | | 23.1 | | J | | 4070 | | | 469 | | | **159** |

[a] A "NA" in one of the Attempt columns indicates that the analytical group had already been collected in a previous attempt and was not intended to be collected during that column's attempt.

[b] Analytical quality is based upon the program 90% analytical completeness objectives.

[c] COPCs/COPECs listed in the FFS: 2,3,7,8-TCDD; 1,2,3,7,8-PeCDD; 1,2,3,6,7,8-HxCDD; 1,2,3,4,7,8-HxCDD; 1,2,3,7,8,9-HxCDD; 1,2,3,4,6,7,8-HpCDD; OCDD; 2,3,7,8-TCDF; 1,2,3,7,8-PeCDF; 2,3,4,7,8-PeCDF; 1,2,3,6,7,8-HxCDF; 1,2,3,7,8,9-HxCDF; 1,2,3,4,7,8-HxCDF; 2,3,4,6,7,8-HxCDF; 1,2,3,4,6,7,8-HpCDF; 1,2,3,4,7,8,9-HpCDF; and OCDF.

[d] Fewer than 2

[e] Positive target analyte identification and concentration comparison chart will comprise the detected analytes from the full Target Analyte List. Additional pages may be necessary.

[f] No rejected data.

[g] A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate. Values associated with a "G" qualifier are quantitatiovely less certain than those not associated with a "G" qualifier. This is because "G" qualified results fall below the low point of the calibration curve.

Notes:

COPCs = contaminants of potential concern
COPECs = contaminants of potential ecological concern
FFS = focused fesability study
HSM = high-solids mass
LSM = low-solids mass
LQ = laboratory qualifier - See Attachment 1 for definitions
PCDD/PCDF = polychlorinated dibenzo-p-dioxin/polychlorinated dibenzofuran
pg/g = picoograms per gram
pg/L = picograms per liter
RPD = relative percent difference
VQ = validation qualifier - See Attachment 2 for definitions
% = percent

# Appendix G

Detailed Evaluation Sheets (Worksheet #11) – PCB Congeners

**EVENT 2 ORIGINAL SAMPLE - PCB CONGENERS**
**PR1CSOCLY**-02B**

**QAPP Worksheet #11-1**
**Project Quality Objectives/Systematic Planning Process Statements (Phase I)**
**Phase I Data Comparison Chart**

| PCB Congener Sample Collection Techniques | Sample Collection Quality[a] | | | Analytical Quality[b] | Identification of Target Analytes | | |
|---|---|---|---|---|---|---|---|
| | Were specified sample aliquots obtained meeting all analytical needs? | | | Are fewer than 17 results "R" qualified (rejected due to association with severe data quality issues)? | Number of COPCs/COPECs[c] listed in the FFS identified? | Are at least 2 more COPCs/COPECs[c] identified in another sample type? | If no single sample type being compared was significantly[d] different in the number of COPCs/COPECs[c] identified (distinguished by asingle "no" in the previous column), are the overall number of target analytes identified significantly[e] different? |
| | Attempt 1 | Attempt 2 | Attempt 3 | | | | |
| Whole Water | No | Yes | NA | Yes | 6 | Yes | NA |
| LSM dissolved plus LSM particulate | No | Yes | NA | Yes | 7 | Yes | NA |
| HSM dissolved plus HSM partiulate | No | Yes | NA | Yes | 9 | No | NA |
| LSM dissolved | No | Yes | NA | Yes | 3 | No | No |
| HSM dissolved | No | Yes | NA | Yes | 2 | | No |
| LSM particulate | No | Yes | NA | Yes | 7 | Yes | NA |
| HSM particulate | No | Yes | NA | Yes | 9 | | NA |

See footnotes on the last page

Positive Target Analyte Identification and Concentration Comparison[†]

| Analyte Identified | PR1CSOCLYWW-02B Whole Water[g] (pg/L) | LQ[h] | VQ | PR1CSOCLYLD-02B LSM Dissolved[g] (pg/L) | LQ[h] | VQ | PR1CSOCLYHD-02B HSM Dissolved[g] (pg/L) | LQ[h] | VQ | % RPD | PR1CSOCLYLP-02B LSM Particulate[g] (pg/g) | LQ[h] | VQ | PR1CSOCLYHP-02B HSM Particulate[g] (pg/g) | LQ[h] | VQ | % RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PCB-1 | 14.1 | D | | 13.4 | D | | 18.4 | D | | **31.4** | | | | 204 | D | M | |
| PCB-4/10 | | | | | | | | | | | | | | 915 | D | M | |
| PCB-6 | 26.6 | D | | 13.6 | DG | | 25.3 | D | | **60.2** | | | | 446 | D | M | |
| PCB-16/32 | | | | | | | | | | | | | | 1840 | D | M | |
| PCB-17 | | | | | | | | | | | | | | 1250 | D | M | |
| PCB-18 | | | | | | | | | | | | | | 2590 | D | M | |
| PCB-19 | 28.3 | D | | | | | | | | | | | | 420 | D | M | |
| PCB-22 | | | | | | | | | | | | | | 1140 | D | J | |
| PCB-25 | | | | | | | | | | | | | | 480 | D | J | |
| PCB-26 | | | | | | | | | | | | | | 701 | D | J | |
| PCB-28 | | | | | | | | | | | | | | 3310 | D | J | |
| PCB-31 | | | | | | | | | | | | | | 2970 | D | J | |
| PCB-35 | | | | 3.63 | DG | | 7.07 | DG | | **64.3** | 879 | DG | | 204 | D | M | **125** |
| PCB-36 | | | | | | | | | | | 478 | DG | | 98.6 | DG | M | **132** |
| PCB-40 | | | | | | | | | | | | | | 718 | D | M | |
| PCB-41/64/71/72 | | | | | | | | | | | | | | 3360 | D | M | |
| PCB-42/59 | | | | | | | | | | | | | | 1210 | D | J | |
| PCB-43/49 | | | | | | | | | | | | | | 2970 | D | J | |
| PCB-44 | | | | | | | | | | | | | | 3890 | D | M | |
| PCB-45 | | | | | | | | | | | | | | 611 | D | M | |
| PCB-46 | 9.49 | DG | | 3.20 | DG | | 9.59 | DG | | **99.9** | 848 | DG | | 303 | D | M | **94.7** |
| PCB-48/75 | 22.3 | D | | | | | | | | | | | | 677 | D | M | |
| PCB-52/69 | | | | | | | | | | | | | | 4780 | D | J | |
| PCB-53 | | | | | | | | | | | | | | 596 | D | M | |
| PCB-55 | | | | | | | | | | | | | | 90.2 | DG | M | |
| PCB-56/60 | | | | | | | | | | | | | | 2400 | D | M | |
| PCB-57 | | | | | | | | | | | | | | 26.9 | DG | M | |
| PCB-58 | | | | | | | | | | | | | | 16.6 | DG | M | |
| PCB-61/70 | | | | | | | | | | | | | | 4540 | D | J | |
| PCB-63 | | | | | | | 4.20 | DG | | | 497 | DG | | 153 | D | J | **106** |
| PCB-67 | | | | | | | | | | | 383 | DG | | 113 | D | M | **109** |
| PCB-74 | | | | | | | | | | | | | | 1450 | D | J | |
| PCB-76/66 | | | | | | | | | | | | | | 3020 | D | J | |
| PCB-79 | | | | 1.92 | DG | | | | | | 420 | DG | | | | | |
| PCB-81 | | | | | | | | | | | 450 | DG | | | | | |
| PCB-82 | 46.1 | D | J | | | | | | | | | | | 1170 | D | J | |
| PCB-84/92 | 129 | D | J | | | | | | | | | | | 3580 | D | M | |
| PCB-85/116 | 48.9 | D | J | 10.5 | D | | 25.6 | D | | **83.7** | | | | 1400 | D | M | |
| PCB-87/117/125 | 117 | D | J | | | | | | | | | | | 3400 | D | M | |
| PCB-88/91 | 40.6 | D | J | | | | | | | | | | | 1060 | D | J | |
| PCB-89 | | | | | | | | | | | 393 | DG | | 90.3 | DG | M | **125** |
| PCB-90/101 | 309 | D | J | | | | 189 | D | | | | | | 8320 | D | M | |
| PCB-94 | | | | | | | | | | | | | | 37 | DG | J | |
| PCB-95/98/102 | 211 | D | J | | | | | | | | | | | 5790 | D | J | |
| PCB-96 | | | | | | | | | | | | | | 65.5 | DG | J | |
| PCB-97 | 95.4 | D | J | | | | | | | | | | | 2490 | D | M | |
| PCB-99 | 114 | D | J | | | | 66.0 | D | | | | | | 3280 | D | M | |
| PCB-100 | | | | | | | | | | | | | | 27.6 | DG | J | |
| PCB-103 | | | | | | | | | | | | | | 52.5 | D | J | |
| PCB-105 | 122 | D | J | | | | | | | | | | | 3350 | D | M | |
| PCB-106/118 | 269 | D | J | | | | | | | | | | | 7890 | D | M | |
| PCB-107/109 | 20.4 | D | J | 4.71 | DG | | 10.8 | D | | **78.5** | | | | 503 | D | J | |
| PCB-108/112 | 15.8 | D | J | 3.54 | DG | | 9.84 | DG | | **94.2** | 1110 | DG | | 403 | D | M | **93.5** |
| PCB-110 | 353 | D | J | | | | | | | | | | | 9800 | D | M | |
| PCB-111/115 | | | | | | | 3.66 | DG | | | 544 | DG | | 183 | D | M | **99.3** |

| Analyte Identified | PR1CSOCLYWW-02B Whole Water[g] (pg/L) | LQ[h] | VQ | PR1CSOCLYLD-02B LSM Dissolved[g] (pg/L) | LQ[h] | VQ | PR1CSOCLYHD-02B HSM Dissolved[g] (pg/L) | LQ[h] | VQ | % RPD | PR1CSOCLYLP-02B LSM Particulate[g] (pg/g) | LQ[h] | VQ | PR1CSOCLYHP-02B HSM Particulate[g] (pg/g) | LQ[h] | VQ | % RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PCB-114 | 6.37 | DG | J | 1.96 | DG | | | | | | 430 | DG | | 175 | D | M | **84.3** |
| PCB-119 | 7.55 | DG | J | | | | 2.64 | DG | | | 424 | DG | | 142 | D | M | **99.6** |
| PCB-122 | | | | 1.21 | DG | | | | | | 261 | DG | | 88.5 | DG | M | **98.7** |
| PCB-123 | | | | | | | | | | | 590 | DG | | 148 | D | J | **120** |
| PCB-124 | 14.5 | D | J | 3.24 | DG | | 7.76 | DG | | **82.2** | 978 | DG | | 379 | D | J | **88.3** |
| PCB-126 | | | | | | | | | | | 529 | DG | | 82.1 | DG | M | **146** |
| PCB-128/162 | 60.0 | D | J | | | | 27.8 | D | J | | 4830 | DG | | 1880 | D | M | **87.9** |
| PCB-129 | 20.0 | D | J | 4.36 | DG | | 9.54 | DG | J | **74.5** | 1330 | DG | | 590 | D | M | **77.1** |
| PCB-130 | 20.0 | D | J | 5.11 | DG | | 10.4 | D | J | **68.2** | 1890 | DG | | 666 | D | M | **95.8** |
| PCB-132/161 | 90.7 | D | J | | | | 42.2 | D | J | | | | | 2890 | D | M | |
| PCB-133/142 | 11.1 | D | J | 2.27 | DG | | | | | | 778 | DG | | 304 | D | M | **87.6** |
| PCB-134/143 | 18.4 | D | J | 4.27 | DG | | | | | | | | | 537 | D | M | |
| PCB-135 | 40.1 | D | J | 8.76 | DG | | 19.9 | D | | **77.7** | | | | 1180 | D | M | |
| PCB-136 | | | | | | | | | | | | | | 1110 | D | M | |
| PCB-137 | 17.7 | D | J | 3.88 | DG | | 11.7 | D | J | **100** | | | | 460 | D | M | |
| PCB-138/163/164 | 334 | D | J | | | | 162 | D | J | | | | | 10100 | D | M | |
| PCB-139/149 | 210 | D | J | | | | | | | | | | | 6730 | D | M | |
| PCB-141 | 59.9 | D | J | | | | | | | | | | | 1870 | D | M | |
| PCB-144 | | | | 3.39 | DG | | 8.35 | DG | | **84.5** | 1380 | DG | | 448 | D | M | **102** |
| PCB-146/165 | 38.3 | D | J | | | | | | | | | | | 1140 | D | M | |
| PCB-147 | | | | | | | | | | | 679 | DG | | 170 | D | M | **120** |
| PCB-151 | | | | | | | | | | | | | | 1850 | D | M | |
| PCB-153 | 265 | D | J | | | | | | | | | | | 7950 | D | M | |
| PCB-154 | | | | | | | | | | | | | | 74.8 | DG | M | |
| PCB-155 | | | | | | | 3.19 | DG | | | | | | | | | |
| PCB-156 | 37.4 | D | J | | | | | | | | | | | 1070 | D | M | |
| PCB-157 | 11.7 | D | J | 2.30 | DG | | 4.94 | DG | J | **72.9** | 1020 | DG | | 269 | D | M | **117** |
| PCB-158/160 | 39.1 | D | J | | | | | | | | | | | 1220 | D | M | |
| PCB-166 | | | | | | | | | | | | | | 59.5 | D | M | |
| PCB-167 | 14.5 | D | J | 3.51 | DG | | 7.68 | DG | J | **74.5** | 1110 | DG | | 436 | D | M | **87.2** |
| PCB-168 | | | | | | | | | | | | | | 7.35 | DG | M | |
| PCB-170 | 72.1 | D | J | | | | | | | | | | | 2600 | D | M | |
| PCB-171 | 22.3 | D | J | | | | | | | | | | | 658 | D | M | |
| PCB-172 | 15.3 | D | J | 3.55 | DG | | 7.64 | DG | J | **73.1** | 1210 | DG | | 444 | D | M | **92.6** |
| PCB-173 | | | | | | | | | | | | | | 69.9 | DG | M | |
| PCB-174 | | | | | | | | | | | | | | 2470 | D | M | |
| PCB-175 | | | | | | | | | | | | | | 116 | D | M | |
| PCB-176 | | | | | | | | | | | | | | 320 | D | M | |
| PCB-177 | 43.3 | D | J | | | | | | | | | | | 1500 | D | M | |
| PCB-178 | 17.8 | D | J | 4.67 | DG | | | | | | 1530 | DG | | 552 | D | M | **93.9** |
| PCB-179 | | | | | | | | | | | | | | 1150 | D | M | |
| PCB-180 | | | | | | | | | | | | | | 5600 | D | M | |
| PCB-182/187 | | | | | | | | | | | | | | 3410 | D | M | |
| PCB-183 | | | | | | | | | | | | | | 1440 | D | M | |
| PCB-184 | | | | 2.40 | DG | | 7.92 | DG | J | **107** | 470 | DG | | | | | |
| PCB-185 | | | | 2.01 | DG | | | | | | | | | 317 | D | M | |
| PCB-189 | | | | | | | | | | | 483 | DG | | 116 | D | M | **123** |
| PCB-190 | | | | | | | | | | | | | | 468 | D | M | |
| PCB-191 | | | | 1.25 | DG | | | | | | | | | 93.1 | DG | M | |
| PCB-193 | 9.42 | DG | J | 2.10 | DG | | 3.98 | DG | J | **61.8** | 711 | DG | | 283 | D | M | **86.1** |
| PCB-194 | | | | | | | | | | | | | | 1580 | D | J | |
| PCB-195 | 15.8 | D | J | | | | 6.95 | DG | J | | 1180 | DG | | 647 | D | J | **58.3** |
| PCB-196/203 | | | | | | | | | | | | | | 1840 | D | M | |
| PCB-198 | | | | | | | | | | | | | | 78.3 | DG | M | |
| PCB-199 | 42.0 | D | J | | | | | | | | | | | 1940 | D | M | |

| Analyte Identified | PR1CSOCLYWW-02B Whole Water[g] (pg/L) | LQ[h] | VQ | PR1CSOCLYLD-02B LSM Dissolved[g] (pg/L) | LQ[h] | VQ | PR1CSOCLYHD-02B HSM Dissolved[g] (pg/L) | LQ[h] | VQ | % RPD | PR1CSOCLYLP-02B LSM Particulate[g] (pg/g) | LQ[h] | VQ | PR1CSOCLYHP-02B HSM Particulate[g] (pg/g) | LQ[h] | VQ | % RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PCB-200 | | | | | | | | | | | | | | 203 | D | M | |
| PCB-201 | | | | | | | | | | | 517 | DG | | 230 | D | M | **76.8** |
| PCB-202 | | | | | | | | | | | 934 | DG | | 450 | D | M | **69.9** |
| PCB-206 | | | | | | | | | | | | | | 2250 | D | J | |
| PCB-207 | | | | | | | | | | | | | | 238 | D | J | |
| PCB-208 | | | | | | | | | | | | | | 749 | D | J | |

[a] A "NA" in one of the Attempt columns indicates that the analytical group had already been collected in a previous attempt and was not intended to be collected during that column's attempt.

[b] Analytical quality is based upon the program 90% analytical completeness objectives.

[c] COPCs/COPECs listed in the FFS: PCB -77, PCB -81, PCB -105, PCB -114, PCB -118, PCB -123, PCB -126, PCB -156, PCB -157, PCB -167, PCB -169, and PCB -189.

[d] At least 2

[e] Fewer than 17

[f] Positive target analyte identification and concentration comparison chart will comprise the detected analytes from the full Target Analyte List. Additional pages may be necessary.

[g] No rejected data.

[h] A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate. Values associated with a "G" qualifier are quantitatiovely less certain than those not associated with a "G" qualifier. This is because "G" qualified results fall below the low point of the calibration curve.

Notes:

COPCs = contaminants of potential concern
COPECs = contaminants of potential ecological concern
FFS = focused fesability study
HSM = high-solids mass
LSM = low-solids mass
LQ = laboratory qualifier - See Attachment 1 for definitions
PCB = polychlorinated biphenyl
pg/g = picograms per gram
pg/L = picograms per liter
RPD = relative percent difference
VQ = validation qualifier - See Attachment 2 for definitions
% = percent

**EVENT 2 FIELD DUPLICATE - PCB CONGENERS**
**PR1**DUP-02B**

**QAPP Worksheet #11-1**
**Project Quality Objectives/Systematic Planning Process Statements (Phase I)**
**Phase I Data Comparison Chart**

| PCB Congener Sample Collection Techniques | Sample Collection Quality[a] | | | Analytical Quality[b] | Identification of Target Analytes | | |
|---|---|---|---|---|---|---|---|
| | Were specified sample aliquots obtained meeting all analytical needs? | | | Are fewer than 17 results "R" qualified (rejected due to association with severe data quality issues)? | Number of COPCs/COPECs[c] listed in the FFS identified? | Are at least 2 more COPCs/COPECs[c] identified in another sample type? | If no single sample type being compared was significantly[d] different in the number of COPCs/COPECs[c] identified (distinguished by asingle "no" in the previous column), are the overall number of target analytes identified significantly[e] different? |
| | Attempt 1 | Attempt 2 | Attempt 3 | | | | |
| Whole Water | No | Yes | NA | Yes | 7 | Yes | NA |
| LSM dissolved plus LSM particulate | No | Yes | NA | Yes | 8 | No | No (62) |
| HSM dissolved plus HSM partiulate | No | Yes | NA | Yes | 9 | No | Yes (138) |
| LSM dissolved | No | Yes | NA | Yes | 3 | No | No |
| HSM dissolved | No | Yes | NA | Yes | 3 | | No |
| LSM particulate | No | Yes | NA | Yes | 8 | No | Yes |
| HSM particulate | No | Yes | NA | Yes | 9 | | Yes |

See footnotes on the last page

**Positive Target Analyte Identification and Concentration Comparison[†]**

| Analyte Identified | PR1WWDUP-02B Whole Water[g] (pg/L) | LQ[h] | VQ | PR1LDDUP-02B LSM Dissolved[g] (pg/L) | LQ[h] | VQ | PR1HDDUP-02B HSM Dissolved[g] (pg/L) | LQ[h] | VQ | % RPD | PR1LPDUP-02B LSM Particulate[g] (pg/g) | LQ[h] | VQ | PR1HPDUP-02B HSM Particulate[g] (pg/g) | LQ[h] | VQ | % RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PCB-1 | 19.9 | D | | 16.7 | D | | 19.3 | D | | **14.4** | | | | 192 | D | M | |
| PCB-4/10 | | | | | | | | | | | | | | 1080 | D | M | |
| PCB-6 | 27.0 | D | | 15.1 | DG | | 25.7 | D | | **52.0** | | | | 639 | D | M | |
| PCB-15 | | | | | | | | | | | | | | 1430 | D | M | |
| PCB-16/32 | | | | | | | | | | | | | | 2250 | D | M | |
| PCB-17 | | | | | | | | | | | | | | 1670 | D | M | |
| PCB-18 | | | | | | | | | | | | | | 2970 | D | M | |
| PCB-19 | 25.3 | D | | | | | | | | | | | | 564 | D | M | |
| PCB-20/21/33 | | | | | | | | | | | | | | 2230 | D | M | |
| PCB-22 | | | | | | | | | | | | | | 1960 | D | J | |
| PCB-25 | 24.8 | D | | | | | | | | | | | | 4100 | D | J | |
| PCB-26 | | | | | | | | | | | | | | 2680 | D | J | |
| PCB-28 | | | | | | | | | | | | | | 15100 | D | J | |
| PCB-31 | | | | | | | | | | | | | | 9100 | D | J | |
| PCB-35 | 8.56 | DG | | | | | 5.95 | DG | | | | | | 242 | D | M | |
| PCB-36 | | | | | | | | | | | 291 | DG | | | | | |
| PCB-37 | | | | | | | | | | | | | | 2050 | D | J | |
| PCB-40 | | | | | | | | | | | | | | 1030 | D | M | |
| PCB-41/64/71/72 | | | | | | | | | | | | | | 5090 | D | M | |
| PCB-42/59 | | | | | | | | | | | | | | 2380 | D | J | |
| PCB-43/49 | | | | | | | | | | | | | | 9130 | D | J | |
| PCB-44 | | | | | | | | | | | | | | 6390 | D | M | |
| PCB-45 | | | | | | | | | | | | | | 755 | D | M | |
| PCB-46 | 12.3 | D | | 4.28 | DG | | 10.2 | D | J | **81.8** | 610 | DG | | 450 | D | M | **30.2** |
| PCB-47 | | | | | | | | | | | | | | 5580 | D | J | |
| PCB-48/75 | 24.4 | D | | | | | | | | | | | | 1110 | D | M | |
| PCB-51 | | | | | | | | | | | | | | 522 | D | J | |
| PCB-52/69 | | | | | | | | | | | | | | 8660 | D | J | |
| PCB-53 | | | | | | | | | | | | | | 966 | D | M | |
| PCB-54 | | | | | | | | | | | | | | 47.2 | D | M | |
| PCB-55 | 3.56 | DG | | | | | | | | | | | | 103 | D | M | |
| PCB-56/60 | | | | | | | | | | | | | | 3320 | D | M | |
| PCB-57 | | | | | | | | | | | | | | 49.0 | D | M | |
| PCB-61/70 | 172 | D | | | | | | | | | | | | 7700 | D | J | |
| PCB-63 | 5.64 | DG | | | | | | | | | 346 | DG | | 670 | D | J | **63.8** |
| PCB-67 | 3.19 | DG | | | | | | | | | | | | 240 | D | M | |
| PCB-68 | | | | | | | | | | | | | | | | | |
| PCB-74 | | | | | | | | | | | | | | 3490 | D | J | |
| PCB-76/66 | 118 | D | J | | | | | | | | | | | 7430 | D | J | |
| PCB-77 | | | | | | | | | | | | | | | | | |
| PCB-79 | 3.49 | DG | | 1.42 | DG | | | | | | | | | | | | |
| PCB-81 | | | | | | | | | | | 88.9 | DG | | | | | |
| PCB-82 | 42.0 | D | | | | | | | | | 2770 | DG | | 1470 | D | M | **61.3** |
| PCB-84/92 | 114 | D | | | | | | | | | | | | 4720 | D | M | |

| Analyte Identified | PR1WWDUP-02B Whole Water[g] (pg/L) | LQ[h] | VQ | PR1LDDUP-02B LSM Dissolved[g] (pg/L) | LQ[h] | VQ | PR1HDDUP-02B HSM Dissolved[g] (pg/L) | LQ[h] | VQ | % RPD | PR1LPDUP-02B LSM Particulate[g] (pg/g) | LQ[h] | VQ | PR1HPDUP-02B HSM Particulate[g] (pg/g) | LQ[h] | VQ | % RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PCB-85/116 | 47.1 | D | | 11.4 | D | | 24.1 | D | J | **71.5** | | | | 1760 | D | M | |
| PCB-87/117/125 | 113 | D | | | | | | | | | 7180 | D | | 4290 | D | M | **50.4** |
| PCB-88/91 | 37.0 | D | | | | | | | | | | | | 1510 | D | M | |
| PCB-89 | | | | | | | | | | | 275 | DG | | 129 | D | M | **72.3** |
| PCB-90/101 | 283 | D | | | | | 193 | D | J | | | | | 11200 | D | M | |
| PCB-95/98/102 | 200 | D | | | | | | | | | | | | 7820 | D | M | |
| PCB-96 | 2.08 | DG | | | | | | | | | | | | | | | |
| PCB-97 | 86.8 | D | | | | | | | | | | | | 3250 | D | M | |
| PCB-99 | 112 | D | | | | | 66.3 | D | J | | | | | 4780 | D | M | |
| PCB-103 | 1.74 | DG | | | | | | | | | | | | | | | |
| PCB-105 | 104 | D | | | | | | | | | 7470 | D | | 4050 | D | M | **59.4** |
| PCB-106/118 | 266 | D | | | | | 144 | D | J | | 16800 | D | | 10500 | D | M | **46.2** |
| PCB-107/109 | 16.2 | D | | 4.94 | DG | | 10.9 | D | J | **75.3** | 1330 | DG | | 750 | D | M | **55.8** |
| PCB-108/112 | 13.4 | D | | 3.30 | DG | | 8.68 | DG | J | **89.8** | 980 | DG | | 524 | D | M | **60.6** |
| PCB-110 | 307 | D | | | | | | | | | | | | 12300 | D | M | |
| PCB-111/115 | 3.75 | DG | | 1.77 | DG | | | | | | 398 | DG | | 192 | D | M | **69.8** |
| PCB-114 | 6.56 | DG | | 1.18 | DG | | | | | | 471 | DG | | 213 | D | M | **75.4** |
| PCB-119 | 5.01 | DG | | | | | 3.14 | DG | J | | 353 | DG | | 240 | D | M | **38.1** |
| PCB-122 | | | | | | | | | | | | | | 110 | D | M | |
| PCB-123 | | | | | | | 4.52 | DG | J | | 432 | DG | | 179 | D | M | **82.8** |
| PCB-124 | 12.7 | D | | | | | 7.85 | DG | J | | 850 | DG | | 464 | D | M | **58.8** |
| PCB-126 | 3.72 | DG | | | | | | | | | | | | 95.7 | D | M | |
| PCB-128/162 | 55.3 | D | | | | | 27.6 | D | J | | 4140 | D | | 2320 | D | M | **56.3** |
| PCB-129 | 19.7 | D | | 4.58 | DG | | 10.8 | D | J | **80.9** | 1290 | DG | | 741 | D | M | **54.1** |
| PCB-130 | 19.9 | D | | 4.45 | DG | | 10.9 | D | J | **84.0** | 1560 | DG | | 868 | D | M | **57.0** |
| PCB-132/161 | 85.6 | D | | | | | 47.0 | D | J | | 6000 | D | | 3480 | D | M | **53.2** |
| PCB-133/142 | 8.92 | DG | | 2.27 | DG | | 5.73 | DG | J | **86.5** | 597 | DG | | 374 | D | M | **45.9** |
| PCB-134/143 | 17.6 | D | | 4.21 | DG | | | | | | | | | 689 | D | M | |
| PCB-135 | 41.0 | D | | 8.82 | DG | | 20.3 | D | J | **78.8** | | | | 1520 | D | M | |
| PCB-136 | 34.5 | D | | | | | | | | | | | | 1460 | D | M | |
| PCB-137 | 13.7 | D | | 3.78 | DG | | 12.9 | D | J | **109** | | | | 665 | D | M | |
| PCB-138/163/164 | 313 | D | | | | | 166 | D | J | | 20800 | D | | 12300 | D | M | **51.4** |
| PCB-139/149 | 206 | D | | | | | | | | | | | | 8730 | D | M | |
| PCB-140 | | | | | | | | | | | 215 | DG | | | | | |
| PCB-141 | 62.9 | D | | | | | | | | | | | | 2340 | D | M | |
| PCB-144 | 11.9 | D | | 3.98 | DG | | 7.19 | DG | J | **57.5** | 852 | DG | | 507 | D | M | **50.8** |
| PCB-146/165 | 34.6 | D | | | | | | | | | | | | 1400 | D | M | |
| PCB-147 | | | | | | | | | | | | | | 270 | D | M | |
| PCB-151 | | | | | | | | | | | | | | 2250 | D | M | |
| PCB-153 | 243 | D | | | | | | | | | | | | 9230 | D | M | |
| PCB-154 | | | | | | | | | | | | | | 123 | D | M | |
| PCB-155 | 2.78 | DG | | 1.40 | DG | | 3.26 | DG | J | **79.8** | | | | | | | |
| PCB-156 | 30.5 | D | | | | | | | | | 2280 | DG | | 1350 | D | M | **51.2** |
| PCB-157 | 7.79 | DG | | 2.49 | DG | | | | | | 720 | DG | | 354 | D | M | **68.2** |
| PCB-158/160 | 36.4 | D | | | | | | | | | | | | 1520 | D | M | |
| PCB-166 | | | | | | | | | | | | | | 51.9 | D | M | |
| PCB-167 | 13.8 | D | | 2.85 | DG | | 6.65 | DG | J | **80.0** | 968 | DG | | 537 | D | M | **57.3** |
| PCB-170 | 72.1 | D | | | | | | | | | 5490 | D | | 2800 | D | M | **64.9** |
| PCB-171 | 20.4 | D | | | | | | | | | 1560 | DG | | 716 | D | M | **74.2** |
| PCB-172 | 12.9 | D | | 3.44 | DG | | 7.93 | DG | J | **79.0** | 1060 | DG | | 505 | D | M | **70.9** |
| PCB-174 | | | | | | | | | | | | | | 2680 | D | M | |

| Analyte Identified | PR1WWDUP-02B Whole Water[g] (pg/L) | LQ[h] | VQ | PR1LDDUP-02B LSM Dissolved[g] (pg/L) | LQ[h] | VQ | PR1HDDUP-02B HSM Dissolved[g] (pg/L) | LQ[h] | VQ | % RPD | PR1LPDUP-02B LSM Particulate[g] (pg/g) | LQ[h] | VQ | PR1HPDUP-02B HSM Particulate[g] (pg/g) | LQ[h] | VQ | % RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PCB-175 | | | | | | | | | | | | | | 137 | D | M | |
| PCB-176 | | | | | | | | | | | | | | 352 | D | M | |
| PCB-177 | 41.1 | D | | | | | | | | | 2990 | DG | | 1590 | D | M | **61.1** |
| PCB-178 | 17.9 | D | | 3.77 | DG | | 9.17 | DG | J | **83.5** | 1180 | DG | | 653 | D | M | **57.5** |
| PCB-179 | | | | | | | | | | | | | | 1250 | D | M | |
| PCB-180 | | | | | | | | | | | | | | 6220 | D | M | |
| PCB-182/187 | | | | | | | | | | | | | | 3790 | D | M | |
| PCB-183 | | | | | | | | | | | | | | 1710 | D | M | |
| PCB-184 | 7.15 | DG | | 1.87 | DG | | | | | | 291 | DG | | | | | |
| PCB-185 | 9.38 | DG | | | | | 5.10 | DG | J | | 725 | DG | | 333 | D | M | **74.1** |
| PCB-189 | | | | | | | | | | | | | | 118 | D | M | |
| PCB-190 | | | | | | | | | | | | | | 552 | D | M | |
| PCB-191 | 3.07 | DG | | | | | | | | | | | | 113 | D | M | |
| PCB-193 | 6.51 | DG | | 1.81 | DG | | | | | | 503 | DG | | 276 | D | M | **58.3** |
| PCB-194 | | | | | | | | | | | | | | 1480 | D | M | |
| PCB-195 | 13.8 | D | J | | | | 8.01 | DG | J | | | | | 707 | D | M | |
| PCB-196/203 | | | | | | | | | | | | | | 1820 | D | M | |
| PCB-197 | | | | | | | | | | | | | | 66.9 | DG | M | |
| PCB-198 | | | | | | | | | | | | | | 95.2 | DG | M | |
| PCB-199 | 36.6 | D | | 8.24 | DG | | | | | | | | | 1750 | D | M | |
| PCB-200 | | | | | | | | | | | | | | 242 | D | M | |
| PCB-201 | 5.85 | DG | | | | | | | | | 506 | DG | | 227 | D | M | **76.1** |
| PCB-202 | 11.1 | D | | 2.41 | DG | | | | | | 765 | DG | | 410 | D | M | **60.4** |
| PCB-206 | | | | | | | | | | | | | | 1420 | D | J | |
| PCB-208 | | | | | | | | | | | | | | 441 | D | J | |

[a] A "NA" in one of the Attempt columns indicates that the analytical group had already been collected in a previous attempt and was not intended to be collected during that column's attempt.

[b] Analytical quality is based upon the program 90% analytical completeness objectives.

[c] COPCs/COPECs listed in the FFS: PCB -77, PCB -81, PCB -105, PCB -114, PCB -118, PCB -123, PCB -126, PCB -156, PCB -157, PCB -167, PCB -169, and PCB -189.

[d] At least 2

[e] Fewer than 17

[f] Positive target analyte identification and concentration comparison chart will comprise the detected analytes from the full Target Analyte List. Additional pages may be necessary.

[g] No rejected data.

[h] A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate. Values associated with a "G" qualifier are quantitatiovely less certain than those not associated with a "G" qualifier. This is because "G" qualified results fall below the low point of the calibration curve.

Notes:

COPCs = contaminants of potential concern
COPECs = contaminants of potential ecological concern
FFS = focused fesability study
HSM = high-solids mass
LSM = low-solids mass
LQ = laboratory qualifier - See Attachment 1 for definitions
PCB = polychlorinated biphenyl
pg/g = picograms per gram
pg/L = picograms per liter
RPD = relative percent difference
VQ = validation qualifier - See Attachment 2 for definitions
% = percent

**EVENT 1 ATTEMPT 3 ORIGINAL SAMPLE - PCB CONGENERS**
**PR1CSOCLY**-01C**

**QAPP Worksheet #11-1**
**Project Quality Objectives/Systematic Planning Process Statements (Phase I)**
**Phase I Data Comparison Chart**

| PCB Congener Sample Collection Techniques | Sample Collection Quality[a] | | | Analytical Quality[b] | Identification of Target Analytes | | |
|---|---|---|---|---|---|---|---|
| | Were specified sample aliquots obtained meeting all analytical needs? | | | Are fewer than 17 results "R" qualified (rejected due to association with severe data quality issues)? | Number of COPCs/COPECs[c] listed in the FFS identified? | Are at least 2 more COPCs/COPECs[c] identified in another sample type? | If no single sample type being compared was significantly[d] different in the number of COPCs/COPECs[c] identified (distinguished by asingle "no" in the previous column), are the overall number of target analytes identified significantly[e] different? |
| | Attempt 1 | Attempt 2 | Attempt 3 | | | | |
| Whole Water | Yes | NA | Yes | Yes | 6 | Yes | NA |
| LSM dissolved plus LSM particulate | Yes | NA | Yes | Yes | 8 | No | No (120) |
| HSM dissolved plus HSM partiulate | Yes | NA | Yes | Yes | 9 | No | Yes (153) |
| LSM dissolved | Yes | NA | Yes | Yes | 2 | Yes | NA |
| HSM dissolved | Yes | NA | Yes | Yes | 6 | | NA |
| LSM particulate | Yes | NA | Yes | Yes | 8 | No | No |
| HSM particulate | Yes | NA | Yes | Yes | 8 | | Yes |

See footnotes on the last page

Positive Target Analyte Identification and Concentration Comparison[f]

| Analyte Identified | PR1CSOCLYWW-01C Whole Water[g] (pg/L) | LQ[h] | VQ | PR1CSOCLYLD-01C LSM Dissolved[g] (pg/L) | LQ[h] | VQ | PR1CSOCLYHD-01C HSM Dissolved[g] (pg/L) | LQ[h] | VQ | % RPD | PR1CSOCLYLP-01C LSM Particulate[g] (pg/g) | LQ[h] | VQ | PR1CSOCLYHP-01C HSM Particulate[g] (pg/g) | LQ[h] | VQ | % RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PCB-1 | | | | | | | | | | | | | | 177 | D, G | J | |
| PCB-4/10 | 135 | D | J | 120 | D | | | | | | | | | 1550 | D | J | |
| PCB-5/8 | | | | | | | | | | | | | | 2190 | D | J | |
| PCB-6 | | | | | | | | | | | | | | 810 | D | J | |
| PCB-11 | | | | | | | | | | | | | | 5120 | D | J | |
| PCB-15 | | | | | | | | | | | | | | 779 | D | J | |
| PCB-16/32 | | | | | | | | | | | | | | 2920 | D | J | |
| PCB-17 | 130 | D | J | | | | | | | | | | | 2450 | D | J | |
| PCB-18 | | | | | | | | | | | | | | 2820 | D | J | |
| PCB-19 | 53.8 | D | J | | | | | | | | | | | 827 | D | J | |
| PCB-20/21/33 | | | | | | | | | | | | | | 1670 | D | J | |
| PCB-22 | | | | | | | | | | | | | | 1710 | D | J | |
| PCB-24/27 | | | | | | | | | | | | | | 467 | D | J | |
| PCB-25 | 41.4 | D | J | | | | | | | | | | | 919 | D | J | |
| PCB-26 | | | | | | | | | | | | | | 1080 | D | J | |
| PCB-28 | | | | | | | | | | | | | | 5920 | D | J | |
| PCB-31 | | | | | | | | | | | | | | 4580 | D | J | |
| PCB-35 | 11.2 | D | | | | | 4.08 | D, G | | | 1540 | D | J | 267 | D | J | **141** |
| PCB-37 | | | | | | | | | | | | | | 1620 | D | J | |
| PCB-40 | | | | | | | | | | | 7030 | D | J | 1080 | D | J | **147** |
| PCB-41/64/71/72 | 149 | B, D | J | | | | | | | | 31700 | B, D | J | 5330 | D | J | **142** |
| PCB-42/59 | 62.3 | D | J | | | | | | | | 11100 | D | J | 1990 | D | J | **139** |
| PCB-43/49 | 163 | D | J | | | | | | | | 34100 | B, D | J | 5450 | D | J | **145** |
| PCB-44 | 179 | B, D | J | | | | | | | | 34400 | B, D | J | 5720 | D | J | **143** |
| PCB-45 | | | | | | | | | | | 5830 | D | J | 767 | D | J | **153** |
| PCB-46 | 20.1 | D | | | | | | | | | 3550 | D | | 523 | D | J | **149** |
| PCB-47 | | | | | | | | | | | 14400 | D | J | 2690 | D | J | **137** |
| PCB-48/75 | | | | | | | | | | | 6340 | D | J | 685 | D | J | **161** |
| PCB-50 | 14.1 | D | | 4.91 | D, G | | 8.70 | D, G | | **55.7** | 1300 | D | | | | | |
| PCB-51 | | | | | | | | | | | 2900 | D | | 560 | D | J | **135** |
| PCB-52/69 | 228 | B, D | J | | | | | | | | 45200 | B, D | J | 6570 | D | J | **149** |
| PCB-53 | 43.9 | D | J | | | | | | | | 6630 | D | J | 1170 | D | J | **140** |
| PCB-55 | | | | | | | | | | | | | | 130 | D, G | J | |
| PCB-56/60 | | | | | | | | | | | 27600 | D | J | 4400 | D | J | **145** |
| PCB-61/70 | 200 | D | J | | | | | | | | 45500 | B, D | J | 6590 | D | J | **149** |
| PCB-63 | 7.98 | D, G | | | | | | | | | 1950 | D | | 330 | D | J | **142** |
| PCB-67 | 3.76 | D, G | | | | | | | | | | | | 153 | D, G | J | |
| PCB-74 | 61.0 | D | J | | | | | | | | 16800 | B, D | J | 2340 | D | J | **151** |
| PCB-76/66 | 150 | D | J | | | | | | | | 35700 | D | J | 6080 | D | J | **142** |
| PCB-77 | | | | | | | | | | | 4370 | D | J | 856 | D | J | **134** |
| PCB-79 | 3.01 | D, G | | | | | | | | | | | | 146 | D, G | J | |
| PCB-81 | | | | | | | 3.05 | D, G | | | | | | | | | |
| PCB-82 | 45.6 | D | J | 11.5 | D | | 18.4 | D | J | **46.2** | 8130 | D | J | 1550 | D | J | **136** |
| PCB-83 | | | | | | | | | | | | | | | | | |

| Analyte Identified | PR1CSOCLYWW-01C Whole Water[g] (pg/L) | LQ[h] | VQ | PR1CSOCLYLD-01C LSM Dissolved[g] (pg/L) | LQ[h] | VQ | PR1CSOCLYHD-01C HSM Dissolved[g] (pg/L) | LQ[h] | VQ | % RPD | PR1CSOCLYLP-01C LSM Particulate[g] (pg/g) | LQ[h] | VQ | PR1CSOCLYHP-01C HSM Particulate[g] (pg/g) | LQ[h] | VQ | % RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PCB-84/92 | 129 | B, D | J | | | | | | | | 23700 | D | J | 4010 | D | J | **142** |
| PCB-85/116 | 47.1 | D | J | 14.1 | D | | 21.9 | D | J | **43.3** | 9720 | D | J | 1980 | D | J | **132** |
| PCB-87/117/125 | 121 | D | J | | | | 50.6 | D | J | | 19800 | D | J | 3780 | D | J | **136** |
| PCB-88/91 | 40.3 | D | J | 13.0 | D | | 21.9 | D | J | **51.0** | 8370 | D | J | 1380 | D | J | **143** |
| PCB-89 | | | | | | | 1.14 | D, G | J | | | | | | | | |
| PCB-90/101 | 288 | B, D | J | 77.8 | D | | | | | | 49600 | B, D | J | 8740 | D | J | **140** |
| PCB-95/98/102 | 221 | B, D | J | | | | | | | | 37800 | B, D | J | 6140 | D | J | **144** |
| PCB-96 | | | | | | | | | | | | | | | | | |
| PCB-97 | 90.7 | D | J | | | | | | | | 15900 | D | J | 3050 | D | J | **136** |
| PCB-99 | 116 | B, D | J | | | | 52.6 | D | J | | 21700 | D | J | 4060 | D | J | **137** |
| PCB-105 | 113 | D | J | | | | 44.6 | D | | | 18300 | D | J | 4080 | D | J | **127** |
| PCB-106/118 | 266 | B, D | J | | | | 123 | B, D | J | | 46900 | B, D | J | 9370 | D | J | **133** |
| PCB-107/109 | 19.6 | D | | | | | 8.47 | D, G | J | | 3600 | D | | 748 | D | J | **131** |
| PCB-108/112 | 15.1 | D | | | | | 7.53 | D, G | J | | 2910 | D | | 494 | D | J | **142** |
| PCB-110 | 343 | B, D | J | | | | 149 | B, D | J | | 59600 | B, D | J | 11400 | D | J | **136** |
| PCB-111/115 | 5.52 | D, G | | | | | | | | | 1490 | D | | 202 | D, G | J | **152** |
| PCB-114 | 5.85 | D, G | | | | | | | | | 1400 | D | | 208 | D, G | J | **148** |
| PCB-119 | 5.70 | D, G | | | | | | | | | | | | 178 | D, G | J | |
| PCB-124 | 13.2 | D | | | | | 5.52 | D, G | J | | 2360 | D | | 475 | D | J | **133** |
| PCB-126 | | | | | | | | | | | | | | 130 | D, G | J | |
| PCB-128/162 | 62.5 | D | J | 13.6 | D | | 21.9 | D | | **46.8** | 9740 | D | J | 2110 | D | J | **129** |
| PCB-129 | 23.0 | D | | 4.18 | D, G | | 7.82 | D, G | | **60.7** | 3070 | D | | 636 | D | J | **131** |
| PCB-130 | 22.5 | D | J | 5.46 | D, G | | 7.45 | D, G | | **30.8** | 3500 | D | | 757 | D | J | **129** |
| PCB-132/161 | 97.6 | D | J | | | | | | | | 14000 | D | J | 3090 | D | J | **128** |
| PCB-133/142 | 10.1 | D | | | | | | | | | 1790 | D | | 309 | D | J | **141** |
| PCB-134/143 | 18.0 | D | | 4.56 | D, G | | 7.02 | D, G | | **42.5** | 2820 | D | | 611 | D | J | **129** |
| PCB-135 | 50.1 | D | J | 12.7 | D | | 19.1 | D | J | **40.3** | 9070 | D | J | 1350 | D | J | **148** |
| PCB-136 | 41.7 | D | J | 12.2 | D | | 21.6 | D | J | **55.6** | 7700 | B, D | J | 1180 | D | J | **147** |
| PCB-137 | 18.0 | D | | 4.37 | D, G | | 8.13 | D, G | | **60.2** | 3500 | D | | 634 | D | J | **139** |
| PCB-138/163/164 | 365 | B, D | J | | | | 126 | B, D | | | 56500 | B, D | J | 11700 | D | J | **131** |
| PCB-139/149 | 267 | D | J | 76.4 | D | | 114 | D | J | **39.5** | 51100 | B, D | J | 8060 | D | J | **146** |
| PCB-141 | 71.8 | D | J | | | | | | | | 12400 | D | J | 2240 | D | J | **139** |
| PCB-144 | 16.1 | D | | | | | | | | | 3280 | D | | 477 | D | J | **149** |
| PCB-146/165 | 40.9 | D | J | | | | | | | | 6530 | D | J | 1240 | D | J | **136** |
| PCB-147 | 7.99 | D, G | | | | | | | | | | | | 216 | D | J | |
| PCB-151 | 71.6 | B, D | J | 19.6 | D | | | | | | 15500 | B, D | J | 2100 | D | J | **152** |
| PCB-153 | 286 | B, D | J | | | | 108 | B, D | | | 50400 | B, D | J | 9110 | D | J | **139** |
| PCB-155 | 4.23 | D, G | | | | | | | | | | | | | | | |
| PCB-156 | 39.1 | D | J | 6.64 | D, G | | 12.8 | D | | **63.4** | 6020 | D | J | 1250 | D | J | **131** |
| PCB-157 | 9.10 | D, G | | | | | 3.71 | D, G | | | 1550 | D | | 336 | D | J | **129** |
| PCB-158/160 | 44.7 | D | J | | | | | | | | 6810 | D | J | 1410 | D | J | **131** |
| PCB-167 | 15.8 | D | | 3.65 | D, G | | 5.34 | D, G | | **37.6** | 2430 | D | | 527 | D | J | **129** |
| PCB-170 | 99.9 | D | J | 20.6 | D | | 31.1 | D | | **40.6** | 17600 | D | J | 2900 | D | J | **143** |
| PCB-171 | 26.0 | D | J | 5.71 | D, G | | 8.38 | D, G | | **37.9** | 4560 | D | J | 826 | D | J | **139** |
| PCB-172 | 17.1 | D | J | 3.69 | D, G | | 6.64 | D, G | | **57.1** | 3370 | D | | 589 | D | J | **140** |

| Analyte Identified | PR1CSOCLYWW-01C Whole Water[g] (pg/L) | LQ[h] | VQ | PR1CSOCLYLD-01C LSM Dissolved[g] (pg/L) | LQ[h] | VQ | PR1CSOCLYHD-01C HSM Dissolved[g] (pg/L) | LQ[h] | VQ | % RPD | PR1CSOCLYLP-01C LSM Particulate[g] (pg/g) | LQ[h] | VQ | PR1CSOCLYHP-01C HSM Particulate[g] (pg/g) | LQ[h] | VQ | % RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PCB-174 | 104 | D | J | 21.9 | D | | 31.6 | D | | **36.3** | 18500 | D | J | 3010 | D | J | **144** |
| PCB-175 | | | | | | | | | | | 1070 | D, G | | 104 | D, G | J | **165** |
| PCB-176 | 13.1 | D | | 3.19 | D, G | | 5.02 | D, G | | **44.6** | 2560 | D | | 354 | D | J | **151** |
| PCB-177 | 60.8 | D | J | 11.2 | D | | 19.1 | D | | **52.1** | 10200 | D | J | 1700 | D | J | **143** |
| PCB-178 | | | | 5.43 | D, G | | 9.00 | D, G | | **49.5** | 5090 | D | J | 719 | D | J | **150** |
| PCB-179 | 47.0 | D | J | | | | | | | | 9850 | D | J | 1320 | D | J | **153** |
| PCB-180 | 222 | B, D | J | | | | | | | | 42700 | D | J | 6910 | D | J | **144** |
| PCB-182/187 | 133 | D | J | 29.8 | D | | 47.8 | D | | **46.4** | 30800 | D | J | 4150 | D | J | **153** |
| PCB-183 | 60.7 | D | J | 13.4 | D | | 20.1 | D | | **40.0** | 12400 | D | J | 1890 | D | J | **147** |
| PCB-184 | | | | 3.24 | D, G | | 6.67 | D, G | | **69.2** | 805 | D, G | | | | | |
| PCB-185 | 13.0 | D | | 3.28 | D, G | | 5.04 | D, G | | **42.3** | 2500 | D | | 361 | D | J | **150** |
| PCB-189 | | | | | | | | | | | 717 | D, G | | | | | |
| PCB-190 | 19.1 | D | J | 4.22 | D, G | | 6.10 | D, G | | **36.4** | 3410 | D | | 585 | D | J | **141** |
| PCB-191 | | | | | | | | | | | 851 | D, G | | 129 | D, G | J | **147** |
| PCB-193 | 8.85 | D, G | | 2.26 | D, G | | 3.49 | D, G | | **42.8** | 1960 | D | | 309 | D | J | **146** |
| PCB-194 | 49.2 | D | J | 8.82 | D, G | | 14.7 | D | | **50.0** | 11200 | D | J | 1710 | D | | **147** |
| PCB-195 | 21.8 | D | J | 3.90 | D, G | | | | | | 4570 | D | J | 667 | D | | **149** |
| PCB-196/203 | 54.5 | D | J | 13.0 | D | | 23.0 | D | | **55.6** | 18400 | D | J | 1900 | D | J | **163** |
| PCB-199 | 53.0 | D | J | 12.2 | D | | 19.4 | D | | **45.6** | 18800 | D | J | 1870 | D | J | **164** |
| PCB-200 | 7.49 | D, G | | | | | | | | | 2680 | D | | 263 | D | J | **164** |
| PCB-201 | 8.62 | D, G | | | | | 3.30 | D, G | | | 2300 | D | | 244 | D | J | **162** |
| PCB-202 | 15.0 | D | J | 3.78 | D, G | | 5.38 | D, G | | **34.9** | 3900 | D | J | 414 | D | J | **162** |
| PCB-206 | 35.6 | D | J | | | | | | | | 8100 | D | J | 1430 | D | | **140** |
| PCB-207 | 3.87 | D, G | J | | | | | | | | 941 | D, G | | | | | |
| PCB-208 | 11.5 | D | J | | | | 3.26 | D, G | | | 2590 | D | | 498 | D | | **135** |
| PCB-209 | | | | | | | | | | | | | | 1130 | D | | |

[a] A "NA" in one of the Attempt columns indicates that the analytical group had already been collected in a previous attempt and was not intended to be collected during that column's attempt.

[b] Analytical quality is based upon the program 90% analytical completeness objectives.

[c] COPCs/COPECs listed in the FFS: PCB -77, PCB -81, PCB -105, PCB -114, PCB -118, PCB -123, PCB -126, PCB -156, PCB -157, PCB -167, PCB -169, and PCB -189.

[d] At least 2

[e] Fewer than 17

[f] Positive target analyte identification and concentration comparison chart will comprise the detected analytes from the full Target Analyte List. Additional pages may be necessary.

[g] No rejected data.

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Notes:

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COPECs = contaminants of potential ecological concern
FFS = focused fesability study
HSM = high-solids mass
LSM = low-solids mass
LQ = laboratory qualifier - See Attachment 1 for definitions
PCB = polychlorinated biphenyl
pg/g = picograms per gram
pg/L = picograms per liter
RPD = relative percent difference
VQ = validation qualifier - See Attachment 2 for definitions
% = percent

**EVENT 1 ATTEMPT 3 FIELD DUPLICATE - PCB CONGENERS**
**PR1**DUP-01C**

**QAPP Worksheet #11-1**
**Project Quality Objectives/Systematic Planning Process Statements (Phase I)**
**Phase I Data Comparison Chart**

| PCB Congener Sample Collection Techniques | Sample Collection Quality[a] | | | Analytical Quality[b] | Identification of Target Analytes | | |
|---|---|---|---|---|---|---|---|
| | Were specified sample aliquots obtained meeting all analytical needs? | | | Are fewer than 17 results "R" qualified (rejected due to association with severe data quality issues)? | Number of COPCs/COPECs[c] listed in the FFS identified? | Are at least 2 more COPCs/COPECs[c] identified in another sample type? | If no single sample type being compared was significantly[d] different in the number of COPCs/COPECs[c] identified (distinguished by asingle "no" in the previous column), are the overall number of target analytes identified significantly[e] different? |
| | Attempt 1 | Attempt 2 | Attempt 3 | | | | |
| Whole Water | Yes | NA | Yes | Yes | 6 | Yes | NA |
| LSM dissolved plus LSM particulate | Yes | NA | Yes | Yes | 5 | Yes | NA |
| HSM dissolved plus HSM partiulate | Yes | NA | Yes | Yes | 9 | No | NA |
| LSM dissolved | Yes | NA | Yes | Yes | 3 | Yes | NA |
| HSM dissolved | Yes | NA | Yes | Yes | 5 | | NA |
| LSM particulate | Yes | NA | Yes | Yes | 5 | Yes | NA |
| HSM particulate | Yes | NA | Yes | Yes | 9 | | NA |

See footnotes on the last page

**Positive Target Analyte Identification and Concentration Comparison[†]**

| Analyte Identified | PR1WWDUP-01C Whole Water[g] (pg/L) | LQ[h] | VQ | PR1LDDUP-01C LSM Dissolved[g] (pg/L) | LQ[h] | VQ | PR1HDDUP-01C HSM Dissolved[g] (pg/L) | LQ[h] | VQ | % RPD | PR1LPDUP-01C LSM Particulate[g] (pg/g) | LQ[h] | VQ | PR1HPDUP-01C HSM Particulate[g] (pg/g) | LQ[h] | VQ | % RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PCB-1 | | | | | | | | | | | | | | 161 | D, G | | |
| PCB-4/10 | 170 | D | J | 129 | D | | | | | | 2600 | D | J | 1420 | D | | **58.7** |
| PCB-5/8 | | | | | | | | | | | | | | 1970 | D | | |
| PCB-6 | | | | | | | | | | | | | | 806 | D | | |
| PCB-7/9 | | | | | | | 7.65 | D, G | | | | | | | | | |
| PCB-11 | | | | | | | | | | | | | | 4130 | D | | |
| PCB-15 | | | | | | | | | | | | | | 819 | D | | |
| PCB-16/32 | 259 | D | J | | | | | | | | | | | 3680 | D | | |
| PCB-17 | 226 | D | J | | | | | | | | | | | 3360 | D | | |
| PCB-18 | | | | | | | | | | | | | | 3560 | D | | |
| PCB-19 | 85.9 | D | J | | | | | | | | | | | 933 | D | | |
| PCB-20/21/33 | | | | | | | | | | | | | | 1170 | D | | |
| PCB-22 | | | | | | | | | | | | | | 1100 | D | | |
| PCB-24/27 | 41.6 | D | | | | | | | | | | | | 605 | D | | |
| PCB-25 | 66.6 | D | J | | | | | | | | | | | 1060 | D | | |
| PCB-26 | 70.9 | D | J | | | | | | | | | | | 950 | D | | |
| PCB-28 | 344 | D | J | | | | | | | | | | | 4500 | D | | |
| PCB-31 | | | | | | | | | | | | | | 3710 | D | | |
| PCB-35 | 17.0 | D | | | | | 3.96 | D, G | J | | | | | 211 | D | | |
| PCB-37 | | | | | | | | | | | | | | 1070 | D | | |
| PCB-40 | 48.1 | D | | | | | | | | | | | | 771 | D | | |
| PCB-41/64/71/72 | 238 | B, D | J | | | | | | | | | | | 3960 | D | | |
| PCB-42/59 | 95.9 | D | J | | | | | | | | | | | 1470 | D | | |
| PCB-43/49 | 279 | D | J | | | | | | | | | | | 4130 | D | | |
| PCB-44 | 279 | B, D | J | | | | | | | | | | | 4390 | D | | |
| PCB-45 | 42.7 | D | | | | | | | | | | | | 534 | D | | |
| PCB-46 | 26.6 | D | | | | | | | | | | | | 416 | D | | |
| PCB-47 | 137 | D | J | | | | | | | | | | | 2140 | D | | |
| PCB-48/75 | 46.1 | D | | | | | | | | | | | | 523 | D | | |
| PCB-50 | 15.3 | D | | 4.71 | D, G | | 8.12 | D, G | J | **53.2** | 655 | D, G | | | | | |
| PCB-51 | 32.1 | D | | | | | | | | | | | | 436 | D | | |
| PCB-52/69 | 362 | B, D | J | | | | | | | | | | | 5220 | D | | |
| PCB-53 | 67.8 | D | J | | | | | | | | | | | 819 | D | | |
| PCB-56/60 | 189 | B, D | J | | | | | | | | | | | 2830 | D | | |
| PCB-61/70 | 345 | D | J | | | | | | | | | | | 5030 | D | | |
| PCB-63 | 15.3 | D | | | | | 3.23 | D, G | J | | 614 | D, G | | 202 | D, G | | **101** |
| PCB-67 | 9.10 | D, G | | | | | | | | | | | | 101 | D, G | | |
| PCB-74 | 109 | D | J | | | | | | | | | | | 1720 | D | | |
| PCB-76/66 | 259 | D | J | | | | | | | | | | | 4020 | D | | |
| PCB-77 | 35.5 | D | | | | | | | | | | | | 563 | D | | |
| PCB-79 | | | | | | | | | | | 396 | D, G | | | | | |
| PCB-82 | 79.9 | D | J | 10.7 | D | | 18.5 | D | J | **53.4** | 3340 | D | J | 1210 | D | | **93.6** |

| Analyte Identified | PR1WWDUP-01C Whole Water[g] (pg/L) | LQ[h] | VQ | PR1LDDUP-01C LSM Dissolved[g] (pg/L) | LQ[h] | VQ | PR1HDDUP-01C HSM Dissolved[g] (pg/L) | LQ[h] | VQ | % RPD | PR1LPDUP-01C LSM Particulate[g] (pg/g) | LQ[h] | VQ | PR1HPDUP-01C HSM Particulate[g] (pg/g) | LQ[h] | VQ | % RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PCB-84/92 | 230 | B, D | J | | | | | | | | 8300 | D | J | 3420 | D | | 83.3 |
| PCB-85/116 | 93.0 | D | J | 13.0 | D | | 22.9 | D | J | 55.2 | 3830 | D | J | 1410 | D | | 92.4 |
| PCB-87/117/125 | 215 | D | J | | | | | | | | 8330 | D | J | 3150 | D | | 90.2 |
| PCB-88/91 | 77.8 | D | J | 12.5 | D | | 19.7 | D | J | 44.7 | 3320 | D | J | 1190 | D | | 94.5 |
| PCB-90/101 | 525 | B, D | J | | | | 129 | B, D | J | | 20400 | B, D | J | 7520 | D | | 92.3 |
| PCB-95/98/102 | 390 | B, D | J | | | | | | | | 15200 | B, D | J | 5440 | D | | 94.6 |
| PCB-97 | 163 | D | J | | | | | | | | 6290 | D | J | 2440 | D | | 88.2 |
| PCB-99 | 214 | B, D | J | | | | 55.7 | D | J | | 8040 | D | J | 3330 | D | | 82.8 |
| PCB-105 | 209 | D | J | | | | 43.9 | D | J | | 7670 | D | J | 3100 | D | | 84.9 |
| PCB-106/118 | 503 | B, D | J | | | | 105 | B, D | J | | 19500 | B, D | J | 7530 | D | | 88.6 |
| PCB-107/109 | 30.3 | D | | 4.78 | D, G | | 7.48 | D, G | J | 44.0 | 1570 | D | | 564 | D | | 94.3 |
| PCB-108/112 | 30.2 | D | | | | | 7.35 | D, G | J | | 1090 | D, G | | 406 | D | | 91.4 |
| PCB-110 | 594 | B, D | J | | | | 146 | B, D | J | | 25500 | B, D | J | 8940 | D | | 96.2 |
| PCB-111/115 | | | | | | | | | | | 669 | D, G | | 165 | D, G | | 121 |
| PCB-114 | 11.7 | D | J | | | | | | | | | | | 187 | D, G | | |
| PCB-119 | 10.2 | D, G | | | | | | | | | 431 | D, G | | 177 | D, G | | 83.6 |
| PCB-122 | | | | | | | | | | | | | | 88.7 | D, G | | |
| PCB-123 | | | | | | | | | | | | | | 185 | D, G | J | |
| PCB-124 | 28.1 | D | | | | | 5.47 | D, G | J | | 988 | D, G | | 364 | D | | 92.3 |
| PCB-128/162 | 114 | D | J | 12.6 | D | | 20.7 | D | J | 48.6 | 4220 | D | J | 1760 | D | | 82.3 |
| PCB-129 | 35.2 | D | J | | | | 6.38 | D, G | J | | 1500 | D | | 475 | D | | 104 |
| PCB-130 | 47.4 | D | J | 4.36 | D, G | | 7.63 | D, G | J | 54.5 | 1620 | D | | 584 | D | | 94.0 |
| PCB-132/161 | 178 | D | J | | | | | | | | 6780 | D | J | 2750 | D | | 84.6 |
| PCB-133/142 | 16.0 | D | J | | | | 3.46 | D, G | J | | 740 | D, G | | 261 | D | | 95.7 |
| PCB-134/143 | 33.4 | D | J | 3.85 | D, G | | 7.17 | D, G | J | 60.3 | 1270 | D | | 481 | D | | 90.1 |
| PCB-135 | 75.7 | D | J | 13.3 | D | | 20.7 | D | J | 43.5 | 4160 | D | J | 1310 | D | | 104 |
| PCB-136 | 75.7 | D | J | 9.13 | D, G | | 17.6 | D | J | 63.4 | 3630 | B, D | J | 1070 | D | | 109 |
| PCB-137 | 32.1 | D | J | 3.76 | D, G | | 6.74 | D, G | J | 56.8 | 1350 | D | | 406 | D | | 107.5 |
| PCB-138/163/164 | 674 | B, D | J | | | | 114 | B, D | J | | 25400 | B, D | J | 9580 | D | | 90.5 |
| PCB-139/149 | 467 | D | J | 67.6 | D | | 118 | D | J | 54.3 | 24100 | B, D | J | 7260 | D | | 107 |
| PCB-141 | 151 | D | J | | | | | | | | 4990 | D | J | 1950 | D | | 87.6 |
| PCB-144 | 34.4 | D | | | | | 7.86 | D, G | J | | 1530 | D | | 402 | D | | 116.8 |
| PCB-146/165 | 77.3 | D | J | | | | | | | | 2990 | D | J | 1100 | D | | 92.4 |
| PCB-147 | | | | | | | | | | | 910 | D, G | | | | | |
| PCB-151 | 138 | B, D | J | 17.8 | D | | 31.3 | D | J | 55.0 | 6320 | B, D | J | 1930 | D | | 106 |
| PCB-153 | 566 | B, D | J | | | | 101 | B, D | J | | 19900 | B, D | J | 7790 | D | | 87.5 |
| PCB-156 | 72.1 | D | J | 7.31 | D, G | | 10.8 | D | J | 38.5 | 2580 | D | J | 1010 | D | | 87.5 |
| PCB-157 | 14.9 | D | J | 2.35 | D, G | | 3.20 | D, G | J | 30.6 | 705 | D, G | | 271 | D | | 88.9 |
| PCB-158/160 | 74.2 | D | J | | | | | | | | 3110 | D | J | 1100 | D | | 95.5 |
| PCB-167 | 31.3 | D | J | 3.89 | D, G | | 5.18 | D, G | J | 28.4 | 1010 | D, G | | 442 | D | | 78.2 |
| PCB-169 | | | | | | | | | | | | | | | | | |
| PCB-170 | 231 | D | J | 15.6 | D | | 29.4 | D | J | 61.3 | 7250 | D | J | 2900 | D | | 85.7 |
| PCB-171 | 61.8 | D | J | 4.47 | D, G | | 7.89 | D, G | J | 55.3 | 1990 | D | J | 677 | D | | 98.5 |
| PCB-172 | 46.5 | D | J | 3.86 | D, G | | 6.40 | D, G | J | 49.5 | 1420 | D | | 558 | D | | 87.2 |

| Analyte Identified | PR1WWDUP-01C Whole Water[g] (pg/L) | LQ[h] | VQ | PR1LDDUP-01C LSM Dissolved[g] (pg/L) | LQ[h] | VQ | PR1HDDUP-01C HSM Dissolved[g] (pg/L) | LQ[h] | VQ | % RPD | PR1LPDUP-01C LSM Particulate[g] (pg/g) | LQ[h] | VQ | PR1HPDUP-01C HSM Particulate[g] (pg/g) | LQ[h] | VQ | % RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PCB-174 | 245 | D | J | 18.4 | D | | 32.0 | D | J | **54.0** | 6750 | D | J | 2740 | D | | **84.5** |
| PCB-175 | | | | | | | | | | | 359 | D, G | | | | | |
| PCB-176 | 26.2 | D | J | 3.47 | D, G | | 4.47 | D, G | J | **25.2** | 1020 | D, G | | 308 | D | | **107** |
| PCB-177 | 136 | D | J | 10.6 | D | | 18.6 | D | J | **54.8** | 4240 | D | J | 1670 | D | | **87.0** |
| PCB-178 | 53.6 | D | J | 6.16 | D, G | | 8.47 | D, G | J | **31.6** | 1930 | D | J | 666 | D | | **97.4** |
| PCB-179 | 97.0 | D | J | | | | | | | | | | | 1250 | D | | |
| PCB-180 | 540 | B, D | J | | | | | | | | 15600 | D | J | 6430 | D | | **83.3** |
| PCB-182/187 | 302 | D | J | 28.8 | D | | 44.2 | D | J | **42.2** | 11100 | D | J | 3730 | D | | **99.4** |
| PCB-183 | 131 | D | J | 12.2 | D | | 19.9 | D | J | **48.0** | 4570 | D | J | 1690 | D | | **92.0** |
| PCB-184 | | | | 3.63 | D, G | | 4.98 | D, G | J | **31.4** | 610 | D, G | | | | | |
| PCB-185 | 32.3 | D | J | | | | | | | | 968 | D, G | | 320 | D | | **101** |
| PCB-189 | | | | | | | | | | | | | | 120 | D, G | | |
| PCB-190 | 47.6 | D | J | 3.29 | D, G | | 6.12 | D, G | J | **60.1** | 1430 | D | | 492 | D | | **97.6** |
| PCB-191 | 8.67 | D, G | J | | | | | | | | 320 | D, G | | | | | |
| PCB-193 | 25.4 | D | J | | | | 3.4 | D, G | J | | 699 | D, G | | 331 | D | | **71.5** |
| PCB-194 | 137 | D | J | 6.79 | D, G | | 15.3 | D | | **77.0** | 3390 | D | J | 1430 | D | | **81.3** |
| PCB-195 | 51.9 | D | J | 3.18 | D, G | | 7.07 | D, G | | **75.9** | 1230 | D, G | J | 610 | D | | **67.4** |
| PCB-196/203 | 153 | D | J | 13.2 | D | | 18.3 | D | J | **32.4** | 4910 | D | J | 1800 | D | | **92.7** |
| PCB-197 | | | | | | | | | | | 327 | D, G | | | | | |
| PCB-199 | 157 | D | J | 11.5 | D | | 17.9 | D | J | **43.5** | 5080 | D | J | 1970 | D | | **88.2** |
| PCB-200 | 20.1 | D | J | | | | | | | | | | | 217 | D | | |
| PCB-201 | 22.0 | D | J | | | | | | | | 685 | D, G | | 234 | D | | **98.2** |
| PCB-202 | 36.3 | D | J | 3.15 | D, G | | 6.06 | D, G | J | **63.2** | 1140 | D, G | J | 430 | D | | **90.4** |
| PCB-206 | 105 | D | J | | | | | | | | | | | 1210 | D | | |
| PCB-207 | 11.2 | D | J | | | | | | | | 251 | D, G | | 167 | D, G | J | **40.2** |
| PCB-208 | 30.0 | D | J | | | | | | | | 945 | D, G | | 412 | D | | **78.6** |
| PCB-209 | | | | | | | | | | | | | | 1080 | D | | |

[a] A "NA" in one of the Attempt columns indicates that the analytical group had already been collected in a previous attempt and was not intended to be collected during that column's attempt.

[b] Analytical quality is based upon the program 90% analytical completeness objectives.

[c] COPCs/COPECs listed in the FFS: PCB -77, PCB -81, PCB -105, PCB -114, PCB -118, PCB -123, PCB -126, PCB -156, PCB -157, PCB -167, PCB -169, and PCB -189.

[d] At least 2

[e] Fewer than 17

[f] Positive target analyte identification and concentration comparison chart will comprise the detected analytes from the full Target Analyte List. Additional pages may be necessary.

[g] No rejected data.

[h] A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate. Values associated with a "G" qualifier are quantitatiovely less certain than those not associated with a "G" qualifier. This is because "G" qualified results fall below the low point of the calibration curve.

Notes:

COPCs = contaminants of potential concern
COPECs = contaminants of potential ecological concern
FFS = focused fesability study
HSM = high-solids mass
LSM = low-solids mass
LQ = laboratory qualifier - See Attachment 1 for definitions
PCB = polychlorinated biphenyl
pg/g = picograms per gram
pg/L = picograms per liter
RPD = relative percent difference
VQ = validation qualifier - See Attachment 2 for definitions
% = percent

## Appendix H

Detailed Evaluation Sheets (Worksheet #11) – Aroclor PCBs

**EVENT 1 ORIGINAL SAMPLE - AROCLOR PCBs**
**PR1CSOCLY**-01B**

**QAPP Worksheet #11-1**
**Project Quality Objectives/Systematic Planning Process Statements (Phase I)**
**Phase I Data Comparison Chart**

| Aroclor PCBs Sample Collection Techniques | Sample Collection Quality[a] | | | Analytical Quality[b] | Identification of Target Analytes | | |
|---|---|---|---|---|---|---|---|
| | Were specified sample aliquots obtained meeting all analytical needs? | | | Is fewer than 1 result "R" qualified (rejected due to association with severe data quality issues)? | Number of COPCs/COPECs[c] listed in the FFS identified? | Is at least 1 more COPC/COPEC[c] identified in another sample type? | If no single sample type being compared was significantly[d] different in the number of COPCs/COPECs[c] identified (distinguished by a single "no" in the previous column), are the overall number of target analytes identified significantly[e] different? |
| | Attempt 1 | Attempt 2 | Attempt 3 | | | | |
| Whole Water | Yes | Yes | NA | Yes | 0 | Yes | NA |
| LSM dissolved plus LSM particulate | Yes | Yes | NA | Yes | 0 | Yes | NA |
| HSM dissolved plus HSM particulate | Yes | Yes | NA | Yes | 1 | No | NA |
| LSM dissolved | Yes | Yes | NA | Yes | 0 | No | No |
| HSM dissolved | Yes | Yes | NA | Yes | 0 | | No |
| LSM particulate | Yes | Yes | NA | Yes | 0 | Yes | NA |
| HSM particulate | No | Yes | NA | Yes | 1 | | NA |

See footnotes on the last page

**Positive Target Analyte Identification and Concentration Comparison**[f]

| Analyte Identified | PR1CSOCLYWW-01B Whole Water[g] (µg/L) | LQ[h] | VQ | PR1CSOCLYLD-01B LSM Dissolved[g] (µg/L) | LQ[h] | VQ | PR1CSOCLYHD-01B HSM Dissolved[g] (µg/L) | LQ[h] | VQ | % RPD | PR1CSOCLYLP-01B LSM Particulate[g] (µg/kg) | LQ[h] | VQ | PR1CSOCLYHP-01B HSM Particulate[g] (µg/kg) | LQ[h] | VQ | % RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Aroclor 1254 | | | | | | | | | | | | | | 130 | P | J | |
| Aroclor 1260 | | | | | | | | | | | | | | 84 | GP | J | |

[a] A "NA" in one of the Attempt columns indicates that the analytical group had already been collected in a previous attempt and was not intended to be collected during that column's attempt.

[b] Analytical quality is based upon the program 90% analytical completeness objectives.

[c] COPCs/COPECs listed in the FFS: Aroclor 1016, Aroclor 1221, Aroclor 1232, Aroclor 1242, Aroclor 1248, Aroclor 1260, Aroclor 1262, and Arolcor 1268.

[d] At least 1 more

[e] Fewer than 1

[f] Positive target analyte identification and concentration comparison chart will comprise the detected analytes from the full Target Analyte List. Additional pages may be necessary.

[g] No rejected data.

[h] A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate. Values associated with a "G" qualifier are quantitatioively less certain than those not associated with a "G" qualifier. This is because "G" qualified results fall below the low point of the calibration curve.

Notes:

COPCs = contaminants of potential concern
COPECs = contaminants of potential ecological concern
FFS = focused fesability study
HSM = high-solids mass
LSM = low-solids mass
LQ = laboratory qualifier - See Attachment 1 for definitions
PCB = polychlorinated biphenyl
RPD = relative percent recovery
µg/L = micrograms per liter
µg/Kg = micrograms per kilogram
VQ = validation qualifier - See Attachment 2 for definitions

**EVENT 1 FIELD DUPLICATE - AROCLOR PCBs**
**PR1**DUP-01B**

**QAPP Worksheet #11-1**
**Project Quality Objectives/Systematic Planning Process Statements (Phase I)**
**Phase I Data Comparison Chart**

| Aroclor PCBs Sample Collection Techniques | Sample Collection Quality[a] | | | Analytical Quality[b] | Identification of Target Analytes | | |
|---|---|---|---|---|---|---|---|
| | Were specified sample aliquots obtained meeting all analytical needs? | | | Is fewer than 1 result "R" qualified (rejected due to association with severe data quality issues)? | Number of COPCs/COPECs[c] listed in the FFS identified? | Is at least 1 more COPC/COPEC[c] identified in another sample type? | If no single sample type being compared was significantly[d] different in the number of COPCs/COPECs[c] identified (distinguished by a single "no" in the previous column), are the overall number of target analytes identified significantly[e] different? |
| | Attempt 1 | Attempt 2 | Attempt 3 | | | | |
| Whole Water | Yes | Yes | NA | Yes | 0 | Yes | NA |
| LSM dissolved plus LSM particulate | Yes | Yes | NA | Yes | 0 | Yes | NA |
| HSM dissolved plus HSM particulate | Yes | Yes | NA | Yes | 1 | No | NA |
| LSM dissolved | Yes | Yes | NA | Yes | 0 | No | No |
| HSM dissolved | Yes | Yes | NA | Yes | 0 | | No |
| LSM particulate | Yes | Yes | NA | Yes | 0 | Yes | NA |
| HSM particulate | No | Yes | NA | Yes | 1 | | NA |

See footnotes on the last page

**Positive Target Analyte Identification and Concentration Comparison[f]**

| Analyte Identified | PR1WWDUP-01B Whole Water[g] (µg/L) | LQ[h] | VQ | PR1LDDUP-01B LSM Dissolved[g] (µg/L) | LQ[h] | VQ | PR1HDDUP-01B HSM Dissolved[g] (µg/L) | LQ[h] | VQ | % RPD | PR1LPDUP-01B LSM Particulate[g] (µg/kg) | LQ[h] | VQ | PR1HPDUP-01B HSM Particulate[g] (µg/kg) | LQ[h] | VQ | % RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Aroclor 1254 | | | | | | | | | | | | | | 160 | | M | |
| Aroclor 1260 | | | | | | | | | | | | | | 67 | G | M | |

[a] A "NA" in one of the Attempt columns indicates that the analytical group had already been collected in a previous attempt and was not intended to be collected during that column's attempt.

[b] Analytical quality is based upon the program 90% analytical completeness objectives.

[c] COPCs/COPECs listed in the FFS: Aroclor 1016, Aroclor 1221, Aroclor 1232, Aroclor 1242, Aroclor 1248, Aroclor 1260, Aroclor 1262, and Arolcor 1268.

[d] At least 1 more

[e] Fewer than 1

[f] Positive target analyte identification and concentration comparison chart will comprise the detected analytes from the full Target Analyte List. Additional pages may be necessary.

[g] No rejected data.

[h] A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate. Values associated with a "G" qualifier are quantitatiovely less certain than those not associated with a "G" qualifier. This is because "G" qualified results fall below the low point of the calibration curve.

Notes:

COPCs = contaminants of potential concern
COPECs = contaminants of potential ecological concern
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HSM = high-solids mass
LSM = low-solids mass
LQ = laboratory qualifier - See Attachment 1 for definitions
PCB = polychlorinated biphenyl
RPD = relative percent recovery
µg/L = micrograms per liter
µg/Kg = micrograms per kilogram
VQ = validation qualifier - See Attachment 2 for definitions

**EVENT 2 ORIGINAL SAMPLE - AROCLOR PCBs**
**PR1CSOCLY**-02B**

**QAPP Worksheet #11-1**
**Project Quality Objectives/Systematic Planning Process Statements (Phase I)**
**Phase I Data Comparison Chart**

| Aroclor PCBs Sample Collection Techniques | Sample Collection Quality[a] | | | Analytical Quality[b] | Identification of Target Analytes | | |
|---|---|---|---|---|---|---|---|
| | Were specified sample aliquots obtained meeting all analytical needs? | | | Is fewer than 1 result "R" qualified (rejected due to association with severe data quality issues)? | Number of COPCs/COPECs[c] listed in the FFS identified? | Is at least 1 more COPC/COPEC[c] identified in another sample type? | If no single sample type being compared was significantly[d] different in the number of COPCs/COPECs[c] identified (distinguished by a single "no" in the previous column), are the overall number of target analytes identified significantly[d] different? |
| | Attempt 1 | Attempt 2 | Attempt 3 | | | | |
| Whole Water | No | Yes | NA | Yes | 0 | No | No |
| LSM dissolved plus LSM particulate | No | Yes | NA | Yes | 0 | No | No |
| HSM dissolved plus HSM particulate | No | Yes | NA | Yes | 0 | No | No |
| LSM dissolved | No | Yes | NA | Yes | 0 | No | No |
| HSM dissolved | No | Yes | NA | Yes | 0 | | No |
| LSM particulate | No | Yes | NA | Yes | 0 | No | No |
| HSM particulate | No | Yes | NA | Yes | 0 | | No |

See footnotes on the last page

**Positive Target Analyte Identification and Concentration Comparison[f]**

| Analyte Identified | PR1CSOCLYWW-02B Whole Water[g] (µg/L) | LQ[h] | VQ | PR1CSOCLYLD-02B LSM Dissolved[g] (µg/L) | LQ[h] | VQ | PR1CSOCLYHD-02B HSM Dissolved[g] (µg/L) | LQ[h] | VQ | % RPD | PR1CSOCLYLP-02B LSM Particulate[g] (µg/kg) | LQ[h] | VQ | PR1CSOCLYHP-02B HSM Particulate[g] (µg/kg) | LQ[h] | VQ | % RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Aroclor 1254 | | | | | | | | | | | | | | 47 | G | M | |

[a] A "NA" in one of the Attempt columns indicates that the analytical group had already been collected in a previous attempt and was not intended to be collected during that column's attempt.
[b] Analytical quality is based upon the program 90% analytical completeness objectives.
[c] COPCs/COPECs listed in the FFS: Aroclor 1016, Aroclor 1221, Aroclor 1232, Aroclor 1242, Aroclor 1248, Aroclor 1260, Aroclor 1262, and Arolcor 1268.
[d] At least 1 more
[e] Fewer than 1
[f] Positive target analyte identification and concentration comparison chart will comprise the detected analytes from the full Target Analyte List. Additional pages may be necessary.
[g] No rejected data.
[h] A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate.
Values associated with a "G" qualifier are quantitatiovely less certain than those not associated with a "G" qualifier. This is because "G" qualified results fall below the low point of the calibration curve.

Notes:
COPCs = contaminants of potential concern
COPECs = contaminantsof potentialecologicalconcern
FFS = focused fesability study
HSM = high-solids mass
LSM = low-solids mass
LQ = laboratory qualifier - See Attachment 1 for definitions
PCB = polychlorinated biphenyl
RPD = relative percent recovery
µg/L = micrograms per liter
µg/Kg = micrograms per kilogram
VQ = laboratory qualifier - See Attachment 2 for definitions

**EVENT 2 FIELD DUPLICATE - AROCLOR PCBs**
**PR1**DUP-02B**

**QAPP Worksheet #11-1**
**Project Quality Objectives/Systematic Planning Process Statements (Phase I)**
**Phase I Data Comparison Chart**

| Aroclor PCBs Sample Collection Techniques | Sample Collection Quality[a] | | | Analytical Quality[b] | Identification of Target Analytes | | |
|---|---|---|---|---|---|---|---|
| | Were specified sample aliquots obtained meeting all analytical needs? | | | Is fewer than 1 result "R" qualified (rejected due to association with severe data quality issues)? | Number of COPCs/COPECs[c] listed in the FFS identified? | Is at least 1 more COPC/COPEC[c] identified in another sample type? | If no single sample type being compared was significantly[d] different in the number of COPCs/COPECs[c] identified (distinguished by a single "no" in the previous column), are the overall number of target analytes identified significantly[e] different? |
| | Attempt 1 | Attempt 2 | Attempt 3 | | | | |
| Whole Water | No | Yes | NA | Yes | 0 | Yes | NA |
| LSM dissolved plus LSM particulate | No | Yes | NA | Yes | 0 | Yes | NA |
| HSM dissolved plus HSM particulate | No | Yes | NA | Yes | 1 | No | NA |
| LSM dissolved | No | Yes | NA | Yes | 0 | No | No |
| HSM dissolved | No | Yes | NA | Yes | 0 | | No |
| LSM particulate | No | Yes | NA | Yes | 0 | Yes | NA |
| HSM particulate | No | Yes | NA | Yes | 1 | | NA |

See footnotes on the last page

**Positive Target Analyte Identification and Concentration Comparison[f]**

| Analyte Identified | PR1WWDUP-02B Whole Water[g] (µg/L) | LQ[h] | VQ | PR1LDDUP-02B LSM Dissolved[g] (µg/L) | LQ[h] | VQ | PR1HDDUP-02B HSM Dissolved[g] (µg/L) | LQ[h] | VQ | % RPD | PR1LPDUP-02B LSM Particulate[g] (µg/kg) | LQ[h] | VQ | PR1HPDUP-02B HSM Particulate[g] (µg/kg) | LQ[h] | VQ | % RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Aroclor 1254 | | | | | | | | | | | | | | 45 | G | M | |
| Aroclor 1260 | | | | | | | | | | | | | | 22 | GP | J | |

[a] A "NA" in one of the Attempt columns indicates that the analytical group had already been collected in a previous attempt and was not intended to be collected during that column's attempt.

[b] Analytical quality is based upon the program 90% analytical completeness objectives.

[c] COPCs/COPECs listed in the FFS: Aroclor 1016, Aroclor 1221, Aroclor 1232, Aroclor 1242, Aroclor 1248, Aroclor 1260, Aroclor 1262, and Arolcor 1268.

[d] At least 1 more

[e] Fewer than 1

[f] Positive target analyte identification and concentration comparison chart will comprise the detected analytes from the full Target Analyte List. Additional pages may be necessary.

[g] No rejected data.

[h] A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate. Values associated with a "G" qualifier are quantitatiovely less certain than those not associated with a "G" qualifier. This is because "G" qualified results fall below the low point of the calibration curve.

Notes:

COPCs = contaminants of potential concern
COPECs = contaminants of potential ecological concern
FFS = focused fesability study
HSM = high-solids mass
LSM = low-solids mass
LQ = laboratory qualifier - See Attachment 1 for definitions
PCB = polychlorinated biphenyl
RPD = relative percent recovery
µg/L = micrograms per liter
µg/Kg = micrograms per kilogram
VQ = laboratory qualifier - See Attachment 2 for definitions

## Appendix I

Detailed Evaluation Sheets (Worksheet #11) – Organochlorine Pesticides

**EVENT 1 ORIGINAL SAMPLE - ORGANOCHLORINE PESTICIDES**
**PR1CSOCLY**-01B**

**QAPP Worksheet #11-1**
**Project Quality Objectives/Systematic Planning Process Statements (Phase I)**
**Phase I Data Comparison Chart**

| Organochlorine Pesticides Sample Collection Techniques | Sample Collection Quality[a] | | | Analytical Quality[b] | Identification of Target Analytes | | |
|---|---|---|---|---|---|---|---|
| | Were specified sample aliquots obtained meeting all analytical needs? | | | Are fewer than 4 results "R" qualified (rejected due to association with severe data quality issues)? | Number of COPCs/COPECs[c] listed in the FFS identified? | Is at least 1 more COPC/COPEC[c] identified in another sample type? | If no single sample type being compared was significantly[d] different in the number of COPCs/COPECs[c] identified (distinguished by a single "no" in the previous column), are the overall number of target analytes identified significantly[e] different? |
| | Attempt 1 | Attempt 2 | Attempt 3 | | | | |
| Whole Water | Yes | Yes | NA | Yes | 3 | No | No |
| LSM dissolved plus LSM particulate | Yes | Yes | NA | Yes | 3 | No | No |
| HSM dissolved plus HSM particulate | Yes | Yes | NA | No (4)[f] | NA | NA | NA |
| LSM dissolved | Yes | Yes | NA | Yes | 3 | No | Yes |
| HSM dissolved | Yes | Yes | NA | Yes | 3 | | Yes |
| LSM particulate | Yes | Yes | NA | Yes | 2 | Yes | NA |
| HSM particulate | No | Yes | NA | No (4)[f] | NA | NA | NA |

See footnotes on the last page

**Positive Target Analyte Identification and Concentration Comparison[g]**

| Analyte Identified | PR1CSOCLYWW-01B Whole Water[h] (pg/L) | LQ[i] | VQ | PR1CSOCLYLD-01B LSM Dissolved[h] (pg/L) | LQ[i] | VQ | PR1CSOCLYHD-01B HSM Dissolved[h] (pg/L) | LQ[i] | VQ | % RPD | PR1CSOCLYLP-01B LSM Particulate[h] (pg/g) | LQ[i] | VQ | PR1CSOCLYHP-01B HSM Particulate (pg/g) | LQ[i] | VQ | % RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| alpha-BHC | | | | 25.8 | | | | | | | | | | | | | |
| Lindane (gamma-BHC) | 313 | | J | 262 | | | 291 | | J | **10.5** | 455 | | | 294 | | J | **43.0** |
| beta-BHC | 136 | | J | 110 | | | 131 | | J | **17.4** | | | | 71.9 | G | J | |
| Heptachlor | 151 | | | 70.9 | G | | 130 | | J | **58.8** | 1300 | DG | J | 138 | G | J | **162** |
| Aldrin | 82.3 | | J | 36.8 | | J | 65 | | J | **55.4** | 772 | | J | | | | |
| Oxychlordane | 46.9 | | J | | | | 44.9 | | J | | 646 | | J | | | | |
| cis-Heptachlor Epoxide | 371 | | J | 210 | | | 320 | | J | **41.5** | 2600 | | J | 555 | | J | **130** |
| trans-Chlordane (gamma) | 2020 | | J | 865 | | J | 1870 | | J | **73.5** | 202000 | | J | 3930 | | J | **192** |
| trans-Nonachlor | 1190 | | J | 422 | | J | 774 | | J | **58.9** | 8890 | | J | 2780 | | J | **105** |
| cis-Chlordane (alpha) | 2270 | D | J | 1120 | | J | 1870 | | J | **50.2** | 17800 | | J | 5320 | | J | **108** |
| Endosulfan I (alpha) | 112 | G | J | 70.3 | G | J | 82.5 | G | J | **16.0** | | | | | | | |
| 4,4'-DDE | | | | | | | | | | | | | | 7840 | | J | |
| Dieldrin | 2450 | BD | J | 1160 | B | J | 2390 | BD | J | **69.3** | | | | 3680 | | J | |
| Endrin | | | | | | | 28.6 | G | J | | | | | | | | |
| cis-Nonachlor | 257 | | J | 117 | | J | 252 | | J | **73.2** | 1820 | | J | 538 | | J | **109** |
| Endosulfan II (beta) | | | | | | | 85.4 | G | J | | | | | | | | |
| 4,4'-DDD | | | | | | | | | | | | | | 29200 | E | J | |
| Endosulfan Sulfate | | | | | | | 101 | G | J | | | | | | | | |
| 4,4'-Methoxychlor | 480 | | J | 239 | | J | 380 | | J | **45.6** | 3980 | DG | | ND | U | R[j] | |
| Mirex | | | | | | | 16.5 | | J | | | | | ND | U | R[j] | |
| Endrin Aldehyde | | | | | | | | | | | | | | ND | U | R[j] | |
| Endrin Ketone | 97.1 | G | J | 85 | B | J | 64.6 | G | J | **27.3** | | | | ND | U | R[j] | |

[a] A "NA" in one of the Attempt columns indicates that the analytical group had already been collected in a previous attempt and was not intended to be collected during that column's attempt.

[b] Analytical quality is based upon the program 90% analytical completeness objectives.

[c] COPCs/COPECs listed in the FFS: cis-Chlordane(alpha), trans-Chlordane(gamma), Dieldrin, 4,4'-DDE, 4,4'-DDD, and 4,4'DDT.

[d] At least 1 more

[e] Fewer than 4

[f] Values in parentheses indicate the total number of rejected results

[g] Positive target analyte identification and concentration comparison chart will comprise the detected analytes from the full Target Analyte List. Additional pages may be necessary.

[h] No rejected data.

[i] A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate. Values associated with a "G" qualifier are quantitatiovely less certain than those not associated with a "G" qualifier. This is because "G" qualified results fall below the low point of the calibration curve.

[j] PR1CSOCLYHP-01B- All data results rejected due to low labeled analog standard recovery. Sample not used during sample collection technique evaluation.

Notes:

COPCs = contaminants of potential concern
COPECs = contaminants of potential ecological concern
FFS = focused fesability study
HSM = high-solids mass

LQ = laboratory qualifier - See Attachment 1 for definitions
pg/g = picograms per gram
pg/L = picograms per liter
R = rejected data result

RPD = relative percent difference
VQ = laboratory qualifier - See Attachment 2 for definitions
% = percent

**EVENT 1 FIELD DUPLICATE - ORGANOCHLORINE PESTICIDES**
**PR1**DUP-01B**

**QAPP Worksheet #11-1**
**Project Quality Objectives/Systematic Planning Process Statements (Phase I)**
**Phase I Data Comparison Chart**

| **Organochlorine Pesticides Sample Collection Techniques** | **Sample Collection Quality**[a] | | | **Analytical Quality**[b] | **Identification of Target Analytes** | | |
|---|---|---|---|---|---|---|---|
| | Were specified sample aliquots obtained meeting all analytical needs? | | | Are fewer than 4 results "R" qualified (rejected due to association with severe data quality issues)? | Number of COPCs/COPECs[c] listed in the FFS identified? | Is at least 1 more COPC/COPEC[c] identified in another sample type? | If no single sample type being compared was significantly[d] different in the number of COPCs/COPECs[c] identified (distinguished by a single "no" in the previous column), are the overall number of target analytes identified significantly[e] different? |
| | Attempt 1 | Attempt 2 | Attempt 3 | | | | |
| Whole Water | Yes | Yes | NA | Yes | 3 | Yes | NA |
| LSM dissolved plus LSM particulate | Yes | Yes | NA | Yes | 3 | Yes | NA |
| HSM dissolved plus HSM particulate | Yes | Yes | NA | Yes (2)[f] | 5 | No | NA |
| LSM dissolved | Yes | Yes | NA | Yes | 3 | No | Yes |
| HSM dissolved | Yes | Yes | NA | Yes | 3 | | Yes |
| LSM particulate | Yes | Yes | NA | Yes | 3 | Yes | NA |
| HSM particulate | No | Yes | NA | Yes (2)[f] | 5 | | NA |

See footnotes on the last page

**Positive Target Analyte Identification and Concentration Comparison[g]**

| Analyte Identified | PR1WWDUP-01B Whole Water[h] (pg/L) | LQ[i] | VQ | PR1LDDUP-01B LSM Dissolved[h] (pg/L) | LQ[i] | VQ | PR1HDDUP-01B HSM Dissolved[h] (pg/L) | LQ[i] | VQ | % RPD | PR1LPDUP-01B LSM Particulate[h] (pg/g) | LQ[i] | VQ | PR1HPDUP-01B HSM Particulate (pg/g) | LQ[i] | VQ | % RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| alpha-BHC | 26.5 | | J | | | | | | | | | | | | | | |
| Lindane (gamma-BHC) | 311 | | J | 286 | | J | 290 | | J | **1.4** | 617 | | J | 319 | | J | **63.7** |
| beta-BHC | 127 | | J | 124 | | J | 128 | | J | **3.2** | 520 | | J | 268 | | J | **64.0** |
| delta-BHC | | | | | | | 6.46 | G | J | | | | | | | | |
| Heptachlor | 143 | | J | | | | 129 | | J | | 1290 | | J | 470 | G | J | **93.2** |
| Aldrin | 88.7 | | J | 40.5 | | J | 55.8 | | J | **31.8** | | | | | | | |
| Oxychlordane | 60.6 | | J | | | | | | | | | | | 476 | | J | |
| cis-Heptachlor Epoxide | 376 | | J | 211 | | J | 335 | | J | **45.4** | 2770 | | J | 1690 | | J | **48.4** |
| trans-Chlordane (gamma) | 1880 | | J | 1020 | D | | 1590 | | J | **43.7** | 22100 | | J | 10900 | | J | **67.9** |
| trans-Nonachlor | 1070 | | J | 605 | | J | 935 | | J | **42.9** | 10800 | | J | 7350 | | J | **38.0** |
| cis-Chlordane (alpha) | 2440 | D | J | 1120 | | J | 1830 | D | | **48.1** | 21800 | | J | 15200 | E | J | **35.7** |
| Endosulfan I (alpha) | 121 | G | J | | | | 117 | G | J | | 1050 | G | J | | | | |
| 4,4'-DDE | | | | | | | | | | | | | | 23000 | | J | |
| Dieldrin | 2610 | BD | J | 1240 | B | J | 2290 | BD | J | **59.5** | 18000 | | J | 9470 | | J | **62.1** |
| cis-Nonachlor | 290 | | J | | | | | | | | 2480 | | J | 2750 | | J | **10.3** |
| Endosulfan II (beta) | | | | | | | 112 | G | J | | | | | | | | |
| 4,4'-DDD | | | | | | | | | | | | | | 102000 | E | J | |
| Endosulfan Sulfate | | | | | | | 112 | G | J | | | | | | | | |
| 4,4'-Methoxychlor | 523 | | J | 257 | DG | J | 375 | | J | **37.3** | 3410 | | J | ND | U | R[J] | |
| Endrin Aldehyde | | | | | | | | | | | | | | ND | U | R[J] | |
| Endrin Ketone | | | | | | | 83.1 | | J | | | | | | | | |

[a] A "NA" in one of the Attempt columns indicates that the analytical group had already been collected in a previous attempt and was not intended to be collected during that column's attempt.

[b] Analytical quality is based upon the program 90% analytical completeness objectives.

[c] COPCs/COPECs listed in the FFS: cis-Chlordane(alpha), trans-Chlordane(gamma), Dieldrin, 4,4'-DDE, 4,4'-DDD, and 4,4'DDT.

[d] At least 1 more

[e] Fewer than 4

[f] Values in parentheses indicate the total number of rejected results

[g] Positive target analyte identification and concentration comparison chart will comprise the detected analytes from the full Target Analyte List. Additional pages may be necessary.

[h] No rejected data.

[i] A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate. Values associated with a "G" qualifier are quantitatiovely less certain than those not associated with a "G" qualifier. This is because "G" qualified results fall below the low point of the calibration curve.

[J] PR1HPDUP-01B All data results rejected due to low labeled analog standard recovery. Evaluation was not impacted based on rejected result.

Notes:

COPCs = contaminants of potential concern
COPECs = contaminants of potential ecological concern
FFS = focused fesability study
HSM = high-solids mass
LQ = laboratory qualifier - See Attachment 1 for definitions
pg/g = picograms per gram
pg/L = picograms per liter
R = rejected data result
RPD = relative percent difference
VQ = laboratory qualifier - See Attachment 2 for definitions
% = percent

**EVENT 2 ORIGINAL SAMPLE - ORGANOCHLORINE PESTICIDES**
**PR1CSOCLY**-02B**

**QAPP Worksheet #11-1**
**Project Quality Objectives/Systematic Planning Process Statements (Phase I)**
**Phase I Data Comparison Chart**

| Organochlorine Pesticides Sample Collection Techniques | Sample Collection Quality[a] | | | Analytical Quality[b] | Identification of Target Analytes | | |
|---|---|---|---|---|---|---|---|
| | Were specified sample aliquots obtained meeting all analytical needs? | | | Are fewer than 4 results "R" qualified (rejected due to association with severe data quality issues)? | Number of COPCs/COPECs[c] listed in the FFS identified? | Is at least 1 more COPC/COPEC[c] identified in another sample type? | If no single sample type being compared was significantly[d] different in the number of COPCs/COPECs[c] identified (distinguished by a single "no" in the previous column), are the overall number of target analytes identified significantly[e] different? |
| | Attempt 1 | Attempt 2 | Attempt 3 | | | | |
| Whole Water | No | Yes | NA | Yes | 3 | Yes | NA |
| LSM dissolved plus LSM particulate | No | Yes | NA | Yes (1)[f] | 3 | Yes | NA |
| HSM dissolved plus HSM particulate | No | Yes | NA | Yes | 4 | No | NA |
| LSM dissolved | No | Yes | NA | Yes | 3 | No | No |
| HSM dissolved | No | Yes | NA | Yes | 3 | | No |
| LSM particulate | No | Yes | NA | Yes (1)[f] | 3 | Yes | NA |
| HSM particulate | No | Yes | NA | Yes | 4 | | NA |

See footnotes on the last page

**Positive Target Analyte Identification and Concentration Comparison[g]**

| Analyte Identified | PR1CSOCLYWW-02B Whole Water[h] (pg/L) | LQ[i] | VQ | PR1CSOCLYLD-02B LSM Dissolved[h] (pg/L) | LQ[i] | VQ | PR1CSOCLYHD-02B HSM Dissolved[h] (pg/L) | LQ[i] | VQ | % RPD | PR1CSOCLYLP-02B LSM Particulate (pg/g) | LQ[i] | VQ | PR1CSOCLYHP-02B HSM Particulate[h] (pg/g) | LQ[i] | VQ | % RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hexachlorobenzene | | | | | | | | | | | | | | 2670 | D | J | |
| alpha-BHC | 70.1 | | | 66.9 | | | 60.3 | | J | **10.4** | | | | 102 | D | J | |
| Lindane (gamma-BHC) | 146 | | | 147 | | | 153 | | J | **4.0** | | | | 342 | D | J | |
| beta-BHC | 23 | | | | | | | | | | | | | 223 | D | J | |
| Heptachlor | 43.9 | G | | | | | 43.2 | G | J | | | | | 680 | D | J | |
| Aldrin | | | | | | | | | | | 1290 | G | | | | | |
| Oxychlordane | 33.4 | | J | | | | | | | | 2710 | | | 554 | D | J | **132** |
| cis-Heptachlor Epoxide | 128 | | J | 65.0 | | | 112 | | J | **53.1** | 6060 | | | 1590 | D | J | **117** |
| trans-Chlordane (gamma) | 674 | | | 210 | | J | 513 | | J | **83.8** | 62600 | | | 10000 | D | M | **145** |
| trans-Nonachlor | 439 | | | 123 | | J | 311 | | J | **86.6** | 39500 | | J | 8080 | D | J | **132** |
| cis-Chlordane (alpha) | 661 | | J | 218 | | J | 591 | | J | **92.2** | 67500 | | J | 13500 | D | J | **133** |
| Endosulfan I (alpha) | 64.4 | G | | | | | 53.7 | G | J | | 2960 | G | J | | | | |
| 4,4'-DDE | | | | | | | | | | | | | | 21100 | D | J | |
| Dieldrin | 421 | | | 220 | | | 480 | | J | **74.3** | 27300 | | J | 5050 | D | J | **138** |
| cis-Nonachlor | 113 | | | 33.6 | | | 80.6 | | J | **82.3** | 11800 | | J | 2320 | D | JH | **134** |
| Endosulfan II (beta) | 633 | | J | 64.9 | G | | 93.5 | G | J | **36.1** | | | | | | | |
| Endosulfan Sulfate | | | | 45.0 | G | | | | | | | | | | | | |
| 4,4'-Methoxychlor | 170 | G | J | 67.0 | G | | 120 | | J | **56.7** | 11500 | G | J | | | | |
| Endrin Aldehyde | | | | | | | | | | | ND | U | R[j] | | | | |
| Mirex | | | | 2.29 | G | J | | | J | | 1090 | G | J | | | | |

[a] A "NA" in one of the Attempt columns indicates that the analytical group had already been collected in a previous attempt and was not intended to be collected during that column's attempt.

[b] Analytical quality is based upon the program 90% analytical completeness objectives.

[c] COPCs/COPECs listed in the FFS: cis-Chlordane(alpha), trans-Chlordane(gamma), Dieldrin, 4,4'-DDE, 4,4'-DDD, and 4,4'DDT.

[d] At least 1 more

[e] Fewer than 4

[f] Values in parentheses indicate the total number of rejected results

[g] Positive target analyte identification and concentration comparison chart will comprise the detected analytes from the full Target Analyte List. Additional pages may be necessary.

[h] No rejected data.

[i] A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate. Values associated with a "G" qualifier are quantitatiovely less certain than those not associated with a "G" qualifier. This is because "G" qualified results fall below the low point of the calibration curve.

[j] PR1CSOCLYLP-02B Data result rejected due to low labeled analog standard recovery. Evaluation was not impacted based on rejected result.

Notes:

COPCs = contaminants of potential concern
COPECs = contaminants of potential ecological concern
FFS = focused fesability study
HSM = high-solids mass
LQ = laboratory qualifier - See Attachment 1 for definitions
pg/g = picograms per gram
pg/L = picograms per liter
R = rejected data result
RPD = relative percent difference
VQ = laboratory qualifier - See Attachment 2 for definitions
% = percent

**EVENT 2 FIELD DUPLICATE - ORGANOCHLORINE PESTICIDES**
**PR1**DUP-02B**

**QAPP Worksheet #11-1**
**Project Quality Objectives/Systematic Planning Process Statements (Phase I)**
**Phase I Data Comparison Chart**

| Organochlorine Pesticides Sample Collection Techniques | Sample Collection Quality[a] | | | Analytical Quality[b] | Identification of Target Analytes | | |
|---|---|---|---|---|---|---|---|
| | Were specified sample aliquots obtained meeting all analytical needs? | | | Are fewer than 4 results "R" qualified (rejected due to association with severe data quality issues)? | Number of COPCs/COPECs[c] listed in the FFS identified? | Is at least 1 more COPC/COPEC[c] identified in another sample type? | If no single sample type being compared was significantly[d] different in the number of COPCs/COPECs[c] identified (distinguished by a single "no" in the previous column), are the overall number of target analytes identified significantly[e] different? |
| | Attempt 1 | Attempt 2 | Attempt 3 | | | | |
| Whole Water | No | Yes | NA | Yes | 3 | No | No |
| LSM dissolved plus LSM particulate | No | Yes | NA | Yes | 3 | No | No |
| HSM dissolved plus HSM particulate | No | Yes | NA | Yes | 3 | No | No |
| LSM dissolved | No | Yes | NA | Yes | 3 | No | No |
| HSM dissolved | No | Yes | NA | Yes | 3 | | No |
| LSM particulate | No | Yes | NA | Yes | 3 | No | No |
| HSM particulate | No | Yes | NA | Yes | 3 | | No |

See footnotes on the last page

**Positive Target Analyte Identification and Concentration Comparison**[f]

| Analyte Identified | PR1WWDUP-02B Whole Water[g] (pg/L) | LQ[h] | VQ | PR1LDDUP-02B LSM Dissolved[g] (pg/L) | LQ[h] | VQ | PR1HDDUP-02B HSM Dissolved[g] (pg/L) | LQ[h] | VQ | % RPD | PR1LPDUP-02B LSM Particulate[g] (pg/g) | LQ[h] | VQ | PR1HPDUP-02B HSM Particulate[g] (pg/g) | LQ[h] | VQ | % RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| alpha-BHC | 72.7 | | | 63.5 | | | 63.2 | | | **0.47** | | | | 82.7 | DG | M | |
| Lindane (gamma-BHC) | 147 | | | 134 | | | 150 | | | **11.3** | | | | 203 | DG | J | |
| beta-BHC | 30.6 | | | | | | | | | | | | | 231 | DG | M | |
| Heptachlor | | | | | | | 41.2 | G | | | 2890 | G | | | | | |
| Aldrin | | | | | | | | | | | 997 | G | | 264 | DG | J | **116** |
| Oxychlordane | 44.6 | | J | | | | | | | | 2110 | | | 460 | DG | M | **128** |
| cis-Heptachlor Epoxide | 137 | | J | 56.2 | | | 119 | | | **71.7** | 4870 | | | 1530 | D | M | **104** |
| trans-Chlordane (gamma) | 648 | | | 204 | | J | 540 | | | **90.3** | 49800 | | | 9350 | D | M | **137** |
| trans-Nonachlor | 421 | | J | 120 | | J | 320 | | J | **90.9** | 27400 | | J | 7790 | D | M | **111** |
| cis-Chlordane (alpha) | 665 | | J | 200 | | J | 622 | | J | **103** | 55600 | | J | 13600 | D | M | **121** |
| Endosulfan I (alpha) | | | | 41.6 | G | J | 52.2 | G | J | **22.6** | 1850 | G | J | 502 | DG | J | **115** |
| Dieldrin | 449 | | J | 214 | | | 456 | | J | **72.2** | 18200 | | J | 5550 | D | J | **107** |
| cis-Nonachlor | 115 | | J | 33.7 | | | 81.8 | | J | **83.3** | 7820 | | J | 2740 | D | J | **96.2** |
| Endosulfan II (beta) | 711 | | J | | | | 80.6 | G | J | | | | | | | | |
| Endosulfan Sulfate | 117 | G | J | 47.9 | G | | | | | | | | | | | | |
| 4,4'-Methoxychlor | 174 | | J | 62.7 | G | | 107 | G | J | **52.2** | 6960 | G | J | | | | |
| Mirex | 13.8 | G | J | | | | | | | | | | | | | | |
| Endrin Ketone | | | | 10.9 | G | | | | | | | | | | | | |

[a] A "NA" in one of the Attempt columns indicates that the analytical group had already been collected in a previous attempt and was not intended to be collected during that column's attempt.

[b] Analytical quality is based upon the program 90% analytical completeness objectives.

[c] COPCs/COPECs listed in the FFS: cis-Chlordane(alpha), trans-Chlordane(gamma), Dieldrin, 4,4'-DDE, 4,4'-DDD, and 4,4'DDT.

[d] At least 1 more

[e] Fewer than 4

[f] Positive target analyte identification and concentration comparison chart will comprise the detected analytes from the full Target Analyte List. Additional pages may be necessary.

[g] No rejected data.

[h] A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate. Values associated with a "G" qualifier are quantitatiovely less certain than those not associated with a "G" qualifier. This is because "G" qualified results fall below the low point of the calibration curve.

Notes:

COPCs = contaminants of potential concern
COPECs = contaminants of potential ecological concern
FFS = focused fesability study
HSM = high-solids mass

LQ = laboratory qualifier - See Attachment 1 for definitions
pg/g = picograms per gram
pg/L = picograms per liter
RPD = relative percent difference

VQ = laboratory qualifier - See Attachment 2 for definitions
% = percent

# Appendix J

Detailed Evaluation Sheets (Worksheet #11) – SVOCs

**EVENT 1 ORIGINAL SAMPLE - SEMIVOLATILES**
**PR1CSOCLY**-01B**

**QAPP Worksheet #11-1**
**Project Quality Objectives/Systematic Planning Process Statements (Phase I)**
**Phase I Data Comparison Chart**

| SVOC Sample Collection Techniques | Sample Collection Quality[a] | | | Analytical Quality[b] | Identification of Target Analytes | |
|---|---|---|---|---|---|---|
| | Were specified sample aliquots obtained meeting all analytical needs? | | | Are fewer than 6 results "R" qualified (rejected due to association with severe data quality issues)? | Number of target analytes identified? | Does the sample collection technique have at least five more target analyte identified than the other sample collection technique? |
| | Attempt 1 | Attempt 2 | Attempt 3 | | | |
| Whole Water | Yes | Yes | NA | Yes | 4 | NA |
| LSM dissolved plus LSM particulate | Yes | Yes | NA | No (9)[c] | NA | NA |
| HSM dissolved plus HSM particulate | Yes | Yes | NA | No (8)[c] | NA | NA |
| LSM dissolved | Yes | Yes | NA | Yes (1)[c] | 3 | NA |
| HSM dissolved | Yes | Yes | NA | No (8)[c] | NA | NA |
| LSM particulate | Yes | Yes | NA | No (9)[c] | NA | NA |
| HSM particulate | No | Yes | NA | Yes (1)[c] | 2 | NA |

**Positive Target Analyte Identification and Concentration Comparison [d]**

| Analyte Identified | PR1CSOCLYWW-01B Whole Water[e] (µg/L) | LQ[f] | VQ | PR1CSOCLYLD-01B LSM Dissolved (µg/L) | LQ[f] | VQ | PR1CSOCLYHD-01B HSM Dissolved (µg/L) | LQ[f] | VQ | % RPD | PR1CSOCLYLP-01B LSM Particulate (µg/kg) | LQ[f] | VQ | PR1CSOCLYHP-01B HSM Particulate (µg/kg) | LQ[f] | VQ | % RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phenol | | | | 2.4 | | | 1.7 | | J | **34.1** | | | | | | | |
| 4-Methylphenol | 0.80 | GD | | 9.3 | | J | 5.4 | | J | **53.1** | | | | 5100 | GD | M | |
| Diethylphthalate | 3.1 | D | | | | | | | | | | | | | | | |
| Di-n-butylphthalate | 2.2 | DB | | 0.70 | GB | | 2.7 | | J | **118** | 4100 | GD | J | 13000 | DB | M | **104** |
| Butylbenzylphthalate | | | | | | | 2.8 | B | J | | | | | | | | |
| Bis(2-ethylhexyl)phthalate | 5.3 | DB | | | | | 29 | EB | J | | | | | | | | |
| Di-n-octylphthalate | | | | ND | U | R[g] | ND | U | R[h] | | ND | U | R[h] | ND | U | R[g] | |
| 4,6-Dinitro-2-methylphenol | | | | | | | ND | U | R[h] | | ND | U | R[h] | | | | |
| N-Nitrosodiphenylamine | | | | | | | ND | U | R[h] | | ND | U | R[h] | | | | |
| 4-Bromophenyl-phenylether | | | | | | | ND | U | R[h] | | ND | U | R[h] | | | | |
| Hexachlorobenzene | | | | | | | ND | U | R[h] | | ND | U | R[h] | | | | |
| Atrazine | | | | | | | ND | U | R[h] | | ND | U | R[h] | | | | |
| Pentachlorophenol | | | | | | | ND | U | R[h] | | ND | U | R[h] | | | | |
| Carbazole | | | | | | | ND | U | R[h] | | ND | U | R[h] | | | | |
| 3,3'-Dichlorobenzidine | | | | | | | | | | | ND | U | R[h] | | | | |

There are no COPC/COPECs in the target list for SVOCs.

[a] A "NA" in one of the Attempt columns indicates that the analytical group had already been collected in a previous attempt and was not intended to be collected during that column's attempt.

[b] Analytical quality is based upon the program 90% analytical completeness objectives.

[c] Values in paretheses indicate the total number of rejected results.

**[d]** Positive target analyte identification and concentration comparison chart will comprise the detected analytes from the full target analyte list. Additional pages may be necessary.

[e] No rejected data.

[f] A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate. Values associated with a "G" qualifier are quantitatiovely less certain than those not associated with a "G" qualifier. This is because "G" qualified results fall below the low point of the calibration curve.

[g] PR1CSOCLYLD-01B and PR1CSOCLYHP-01B data results rejected due to low internal standard recovery. Sample collection technique evaluation not impacted based on rejected results.

[h] PR1CSOCLYHD-01B and PR1CSOCLYLP-01B data results rejected due to low internal standard recovery. Samples not used during sample collection technique evaluation.

Notes:

COPCs = contaminants of potential concern
COPECs = contaminants of potential ecological concern
HSM = high-solids mass
LSM = low-solids mass
LQ = laboratory qualifier - See Attachment 1 for definitions
R = rejected data result
RPD = relative percent difference
SVOC = semivolatile organic compound
µg/L = micrograms per liter
µg/kg = micrograms per kilograms
VQ = laboratory qualifier - See Attachment 2 for definitions
% = percent

**EVENT 1 FIELD DUPLICATE - SEMIVOLATILES**
**PR1**DUP-01B**

**QAPP Worksheet #11-1**
**Project Quality Objectives/Systematic Planning Process Statements (Phase I)**
**Phase I Data Comparison Chart**

| SVOC Sample Collection Techniques | Sample Collection Quality[a] | | | Analytical Quality[b] | Identification of Target Analytes | |
|---|---|---|---|---|---|---|
| | Were specified sample aliquots obtained meeting all analytical needs? | | | Are fewer than 6 results "R" qualified (rejected due to association with severe data quality issues)? | Number of target analytes identified? | Does the sample collection technique have at least five more target analyte identified than the other sample collection technique? |
| | Attempt 1 | Attempt 2 | Attempt 3 | | | |
| Whole Water | Yes | Yes | NA | Yes | 4 | No |
| LSM dissolved plus LSM particulate | Yes | Yes | NA | Yes (1)[c] | 4 | No |
| HSM dissolved plus HSM particulate | Yes | Yes | NA | No (8)[c] | NA | NA |
| LSM dissolved | Yes | Yes | NA | Yes | 4 | NA |
| HSM dissolved | Yes | Yes | NA | No (8)[c] | NA | NA |
| LSM particulate | Yes | Yes | NA | Yes (1)[c] | 2 | No |
| HSM particulate | No | Yes | NA | Yes (1)[c] | 4 | No |

**Positive Target Analyte Identification and Concentration Comparison[c]**

| Analyte Identified | PR1WWDUP-01B Whole Water[e] (µg/L) | LQ[f] | VQ | PR1LDDUP-01B LSM Dissolved[e] (µg/L) | LQ[f] | VQ | PR1HDDUP-01B HSM Dissolved (µg/L) | LQ[f] | VQ | % RPD | PR1LPDUP-01B LSM Particulate (µg/kg) | LQ[f] | VQ | PR1HPDUP-01B HSM Particulate (µg/kg) | LQ[f] | VQ | % RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phenol | 2.1 | GD | | | | | 2.0 | GD | | | | | | | | | |
| Acetophenone | | | | 0.30 | G | | | | | | | | | | | | |
| 4-Methylphenol | | | | | | | 8.6 | D | J | | | | | 4000 | | M | |
| Diethylphthalate | 3.7 | D | | 3.7 | | J | 3.4 | D | J | **8.45** | 2200 | G | | | | | |
| Di-n-butylphthalate | 3.0 | GDB | | 1.1 | B | | 2.1 | GD | J | **62.5** | 5900 | G | | 4200 | B | M | **33.7** |
| Butylbenzylphthalate | | | | 1.7 | B | | | | | | | | | 37000 | EB | J | |
| Bis(2-ethylhexyl)phthalate | 8.3 | DB | | | | | | | | | | | | 25000 | EB | J | |
| Di-n-octylphthalate | | | | | | | ND | U | R[g] | | ND | U | R[h] | ND | U | R[h] | |
| 4,6-Dinitro-2-methylphenol | | | | | | | ND | U | R[g] | | | | | | | | |
| N-Nitrosodiphenylamine | | | | | | | ND | U | R[g] | | | | | | | | |
| 4-Bromophenyl-phenyl ether | | | | | | | ND | U | R[g] | | | | | | | | |
| Hexachlorobenzene | | | | | | | ND | U | R[g] | | | | | | | | |
| Atrazine | | | | | | | ND | U | R[g] | | | | | | | | |
| Pentachlorophenol | | | | | | | ND | U | R[g] | | | | | | | | |
| Carbazole | | | | | | | ND | U | R[g] | | | | | | | | |

There are no COPC/COPECs in the target list for SVOCs.

[a] A "NA" in one of the Attempt columns indicates that the analytical group had already been collected in a previous attempt and was not intended to be collected during that column's attempt.

[b] Analytical quality is based upon the program 90% analytical completeness objectives.

[c] Values in paretheses indicate the total number of rejected results.

[d] Positive target analyte identification and concentration comparison chart will comprise the detected analytes from the full target analyte list. Additional pages may be necessary.

[e] No rejected data.

[f] A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate. Values associated with a "G" qualifier are quantitatiovely less certain than those not associated with a "G" qualifier. This is because "G" qualified results fall below the low point of the calibration curve.

[g] PR1HDDUP-01B data results rejected due to low internal standard recovery. Sample not used during sample collection technique evaluation.

[h] PR1LPDUP-01B and PR1HPDUP-01B data results rejected due to low internal standard recovery. Sample collection technique evaluation not impacted based on rejected results.

Notes:

COPCs = contaminants of potential concern
COPECs = contaminants of potential ecological concern
HSM = high-solids mass
LSM = low-solids mass
LQ = laboratory qualifier - See Attachment 1 for definitions
R = rejected data result
RPD = relative percent difference
SVOC = semivolatile organic compound
µg/L = micrograms per liter
µg/kg = micrograms per kilograms
VQ = laboratory qualifier - See Attachment 2 for definitions
% = percent

**EVENT 2 ORIGINAL SAMPLE - SEMIVOLATILES**
**PR1CSOCLY**-02B**

**QAPP Worksheet #11-1**
**Project Quality Objectives/Systematic Planning Process Statements (Phase I)**
**Phase I Data Comparison Chart**

| SVOC Sample Collection Techniques | Sample Collection Quality[a] | | | Analytical Quality[b] | Identification of Target Analytes | |
|---|---|---|---|---|---|---|
| | Were specified sample aliquots obtained meeting all analytical needs? | | | Are fewer than 6 results "R" qualified (rejected due to association with severe data quality issues)? | Number of target analytes identified? | Does the sample collection technique have at least five more target analyte identified than the other sample collection technique? |
| | Attempt 1 | Attempt 2 | Attempt 3 | | | |
| Whole Water | No | Yes | NA | Yes | 4 | No |
| LSM dissolved plus LSM particulate | No | Yes | NA | Yes | 5 | No |
| HSM dissolved plus HSM particulate | No | Yes | NA | Yes | 10 | Yes |
| LSM dissolved | No | Yes | NA | Yes | 4 | No |
| HSM dissolved | No | Yes | NA | Yes | 5 | No |
| LSM particulate | No | Yes | NA | Yes | 1 | No |
| HSM particulate | No | Yes | NA | Yes | 8 | Yes |

**Positive Target Analyte Identification and Concentration Comparison[c]**

| Analyte Identified | PR1CSOCLYWW-02B Whole Water[d] (µg/L) | LQ[e] | VQ | PR1CSOCLYLD-02B LSM Dissolved[d] (µg/L) | LQ[e] | VQ | PR1CSOCLYHD-02B HSM Dissolved[d] (µg/L) | LQ[e] | VQ | % RPD | PR1CSOCLYLP-02B LSM Particulate[d] (µg/kg) | LQ[e] | VQ | PR1CSOCLYHP-02B HSM Particulate[d] (µg/kg) | LQ[e] | VQ | % RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phenol | | | | 0.27 | G | J | 0.29 | G | | **7.14** | | | | | | | |
| Acetophenone | 0.17 | G | | 0.16 | G | | 0.17 | G | | **6.06** | | | | | | | |
| 4-Methylphenol | | | | | | | | | | | | | | 120 | G | J | |
| Dibenzofuran | | | | | | | | | | | | | | 48 | G | M | |
| Diethylphthalate | 1.3 | | | 1.3 | | | 1.3 | | | **0.00** | | | | 35 | G | M | |
| Carbazole | | | | | | | | | | | | | | 300 | G | M | |
| Di-n-butylphthalate | 0.22 | G | | 0.24 | G | | 0.28 | G | | **15.4** | | | | 320 | G | M | |
| Butylbenzylphthalate | | | | | | | | | | | | | | 1200 | | M | |
| Bis(2-ethylhexyl)phthalate | 2.5 | | | | | | 2.1 | | | | 240000 | | | 12000 | D | J | **181** |
| Di-n-octylphthalate | | | | | | | | | | | | | | 2000 | | J | |

There are no COPC/COPECs in the target list for SVOCs.

[a] A "NA" in one of the Attempt columns indicates that the analytical group had already been collected in a previous attempt and was not intended to be collected during that column's attempt.

[b] Analytical quality is based upon the program 90% analytical completeness objectives.

[c] Positive target analyte identification and concentration comparison chart will comprise the detected analytes from the full target analyte list. Additional pages may be necessary.

[d] No rejected data.

[e] A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate. Values associated with a "G" qualifier are quantitatiovely less certain than those not associated with a "G" qualifier. This is because "G" qualified results fall below the low point of the calibration curve.

Notes:

COPCs = contaminants of potential concern
COPECs = contaminants of potential ecological concern
HSM = high-solids mass
LSM = low-solids mass
LQ = laboratory qualifier - See Attachment 1 for definitions
RPD = relative percent difference
SVOC = semivolatile organic compound
µg/L = micrograms per liter
µg/kg = micrograms per kilograms
VQ = laboratory qualifier - See Attachment 2 for definitions
% = percent

**EVENT 2 FIELD DUPLICATE - SEMIVOLATILES**
**PR1**DUP-02B**

**QAPP Worksheet #11-1**
**Project Quality Objectives/Systematic Planning Process Statements (Phase I)**
**Phase I Data Comparison Chart**

| SVOC Sample Collection Techniques | Sample Collection Quality[a] | | | Analytical Quality[b] | Identification of Target Analytes | |
|---|---|---|---|---|---|---|
| | Were specified sample aliquots obtained meeting all analytical needs? | | | Are fewer than 6 results "R" qualified (rejected due to association with severe data quality issues)? | Number of target analytes identified? | Does the sample collection technique have at least five more target analyte identified than the other sample collection technique? |
| | Attempt 1 | Attempt 2 | Attempt 3 | | | |
| Whole Water | No | Yes | NA | Yes | 4 | No |
| LSM dissolved plus LSM particulate | No | Yes | NA | Yes | 5 | No |
| HSM dissolved plus HSM particulate | No | Yes | NA | Yes | 8 | No |
| LSM dissolved | No | Yes | NA | Yes | 4 | No |
| HSM dissolved | No | Yes | NA | Yes | 4 | No |
| LSM particulate | No | Yes | NA | Yes | 1 | No |
| HSM particulate | No | Yes | NA | Yes | 6 | Yes |

**Positive Target Analyte Identification and Concentration Comparison[c]**

| Analyte Identified | PR1WWDUP-02B Whole Water[d] (µg/L) | LQ[e] | VQ | PR1LDDUP-02B LSM Dissolved[d] (µg/L) | LQ[e] | VQ | PR1HDDUP-02B HSM Dissolved[d] (µg/L) | LQ[e] | VQ | % RPD | PR1LPDUP-02B LSM Particulate[d] (µg/kg) | LQ[e] | VQ | PR1HPDUP-02B HSM Particulate[d] (µg/kg) | LQ[e] | VQ | % RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phenol | 0.18 | G | J | 0.32 | G | | 0.28 | G | | **13.3** | | | | | | | |
| Acetophenone | | | | 0.14 | G | | | | | | | | | | | | |
| 4-Methylphenol | | | | | | | | | | | | | | 66 | G | J | |
| Dibenzofuran | | | | | | | | | | | | | | 42 | G | M | |
| Diethylphthalate | 1.6 | | | 1.1 | | | 1.1 | | | **0.00** | | | | | | | |
| Carbazole | | | | | | | | | | | | | | 130 | G | M | |
| Di-n-butylphthalate | 0.32 | G | | 0.20 | G | | 0.28 | G | | **33.3** | | | | 250 | G | M | |
| Butylbenzylphthalate | | | | | | | | | | | | | | 1400 | | M | |
| Bis(2-ethylhexyl)phthalate | 3.0 | | | | | | 2.3 | | | | 180000 | | | 11000 | D | J | **177** |

There are no COPC/COPECs in the target list for SVOCs.

[a] A "NA" in one of the Attempt columns indicates that the analytical group had already been collected in a previous attempt and was not intended to be collected during that column's attempt.

[b] Analytical quality is based upon the program 90% analytical completeness objectives.

[c] Positive target analyte identification and concentration comparison chart will comprise the detected analytes from the full target analyte list. Additional pages may be necessary.

[d] No rejected data.

[e] A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate. Values associated with a "G" qualifier are quantitatiovely less certain than those not associated with a "G" qualifier. This is because "G" qualified results fall below the low point of the calibration curve.

Notes:

COPCs = contaminants of potential concern
COPECs = contaminants of potential ecological concern
HSM = high-solids mass
LSM = low-solids mass
LQ = laboratory qualifier - See Attachment 1 for definitions
RPD = relative percent difference
SVOC = semivolatile organic compound
µg/L = micrograms per liter
µg/kg = micrograms per kilograms
VQ = laboratory qualifier - See Attachment 2 for definitions
% = percent

## Appendix K

Detailed Evaluation Sheets (Worksheet #11) – SVOCs SIM

**EVENT 1 ORIGINAL SAMPLE- SEMIVOLATILES-SIM**
**PR1CSOCLY**-01B**

**QAPP Worksheet #11-1**
**Project Quality Objectives/Systematic Planning Process Statements (Phase I)**
**Phase I Data Comparison Chart**

| SVOC SIM Sample Collection Techniques | Sample Collection Quality[a] | | | Analytical Quality[b] | Identification of Target Analytes | | |
|---|---|---|---|---|---|---|---|
| | Were specified sample aliquots obtained meeting all analytical needs? | | | Are fewer than 3 results "R" qualified (rejected due to association with severe data quality issues)? | Number of COPCs/COPECs[c] listed in the FFS identified? | Are at least 2 more COPCs/COPECs[c] identified in another sample type? | If no single sample types being compared was significantly[d] different in the number of COPCs/COPECs[c] identified (distinguished by a single "no" in the previous column), are the overall number of target analytes identified significantly[e] different? |
| | Attempt 1 | Attempt 2 | Attempt 3 | | | | |
| Whole Water | Yes | Yes | NA | Yes | 12 | Yes | NA |
| LSM dissolved plus LSM particulate | Yes | Yes | NA | Yes | 10 | Yes | NA |
| HSM dissolved plus HSM particulate | Yes | Yes | NA | Yes | 16 | No | NA |
| LSM dissolved | Yes | Yes | NA | Yes | 4 | Yes | NA |
| HSM dissolved | Yes | Yes | NA | Yes | 7 | | NA |
| LSM particulate | Yes | Yes | NA | Yes | 6 | Yes | NA |
| HSM particulate | No | Yes | NA | Yes | 14 | | NA |

See footnotes on the last page

**Positive Target Analyte Identification and Concentration Comparison[f]**

| Analyte Identified | PR1CSOCLYWW-01B Whole Water[g] (µg/L) | LQ[h] | VQ | PR1CSOCLYLD-01B LSM Dissolved[g] (µg/L) | LQ[h] | VQ | PR1CSOCLYHD-01B HSM Dissolved[g] (µg/L) | LQ[h] | VQ | % RPD | PR1CSOCLYLP-01B LSM Particulate[g] (µg/kg) | LQ[h] | VQ | PR1CSOCLYHP-01B HSM Particulate[g] (µg/kg) | LQ[h] | VQ | % RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | 0.26 | DB | J | 0.34 | DB | | 0.24 | DB | J | **34.5** | | | | | | | |
| 2-Methylnaphthalene | 0.32 | DB | J | 0.41 | DB | | 0.34 | DB | J | **18.7** | | | | 110 | DB | J | |
| Acenaphthene | 0.023 | D | J | 0.022 | D | | 0.019 | D | J | **14.6** | | | | | | | |
| Fluorene | 0.031 | DB | J | 0.021 | D | | 0.025 | DB | J | **17.4** | | | | 75 | D | J | |
| Phenanthrene | 0.11 | DB | J | | | | 0.076 | DB | J | | | | | 710 | DB | J | |
| Anthracene | 0.022 | DB | J | | | | | | | | | | | 120 | D | J | |
| Fluoranthene | 0.15 | DB | J | | | | 0.054 | DB | J | | 870 | DB | J | 1900 | DB | J | **74.4** |
| Pyrene | 0.15 | DB | J | | | | 0.083 | DB | J | | 930 | DB | J | 1000 | DB | J | **7.25** |
| Benzo(a)anthracene | | | | | | | | | | | | | | 780 | D | J | |
| Chrysene | | | | | | | | | | | | | | 920 | D | J | |
| Benzo(b)fluoranthene | 0.050 | DB | J | | | | | | | | 630 | D | | 890 | D | J | **34.2** |
| Benzo(k)fluoranthene | 0.049 | DB | J | | | | | | | | 500 | D | | 730 | D | J | **37.4** |
| Benzo(a)pyrene | 0.038 | DB | J | | | | | | | | 450 | D | | 750 | D | J | **50.0** |
| Indeno(1,2,3-cd)pyrene | | | | | | | | | | | | | | 400 | D | J | |
| Dibenzo(a,h)anthracene | | | | | | | | | | | | | | 120 | D | J | |
| Benzo(g,h,i)perylene | 0.022 | DB | J | | | | | | | | 310 | D | | 410 | D | J | **27.8** |
| 1-Methylnaphthalene | 0.22 | DB | J | 0.28 | D | | 0.23 | DB | J | **19.6** | | | | 68 | D | J | |
| Benzo[e]pyrene | 0.036 | DB | J | | | | | | | | 420 | D | | 640 | D | J | **41.5** |
| Perylene | | | | | | | | | | | | | | 200 | D | J | |
| 3,6-Dimethylphenanthrene | | | | | | | | | | | | | | 54 | D | J | |
| 1-Methylanthracene | 0.049 | DB | J | 0.031 | D | J | 0.050 | DB | J | **46.9** | 620 | D | J | 260 | D | J | **81.8** |
| 1-Methylfluoranthene | | | | | | | | | | | 310 | D | | 180 | D | J | **53.1** |
| 1-Methylpyrene | | | | | | | | | | | | | | 87 | D | J | |
| 2,6-Dimethylnaphthalene | 0.16 | DB | J | 0.10 | D | | 0.14 | DB | J | **33.3** | 480 | D | | 150 | D | J | **104.8** |
| 2,3,5-Trimethylnaphthalene | 0.092 | DB | J | 0.054 | D | | 0.070 | DB | J | **25.8** | 580 | GD | | 120 | D | J | **131.4** |
| 1,1'-Biphenyl | 0.022 | DB | J | | | | 0.019 | DB | J | | | | | | | | |
| 1-Methylphenanthrene | 0.084 | DB | J | 0.037 | D | | 0.069 | DB | J | **60.4** | | | | 190 | | J | |
| Dibenzothiophene | 0.029 | DB | J | | | | 0.026 | DB | J | | | | | 51 | | J | |

[a] A "NA" in one of the Attempt columns indicates that the analytical group had already been collected in a previous attempt and was not intended to be collected during that column's attempt.
[b] Analytical quality is based upon the program 90% analytical completeness objectives.
[c] COPCs/COPECs listed in the FFS: Naphthalene, Fluorene, Pyrene, Benzo(k)fluoranthene, Benzo(g,h,i)perylene, 2-methylnaphthalene, Phenanthrene, Benzo(a)anthracene, Benzo(a)pyrene, Acenaphthylene, Anthracene, Chrysene, Indeno(1,2,3-cd)pyrene, Acenaphthene, Fluoranthene, Benzo(b)fluoranthene, and Dibenzo(a,h)anthracene.
[d] At least 2 more
[e] Fewer than 3
[f] Positive target analyte identification and concentration comparison chart will comprise the detected analytes from the full target analyte list. Additional pages may be necessary.
[g] No rejected data.
[h] A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate. Values associated with a "G" qualifier are quantitatiovely less certain than those not associated with a "G" qualifier. This is because "G" qualified results fall below the low point of the calibration curve.

Notes:
COPCs = contaminants of potential concern
COPECs = contaminants of potential ecological concern
FFS = focused fesability study
HSM = high-solids mass
LSM = low-solids mass
LQ = laboratory qualifier - See Attachment 1 for definitions
RPD = relative percent difference
SIM = selective ion monitoring
SVOC = semivolatile organic compound
µg/L = micrograms per liter
µg/kg = micrograms per kilograms
VQ = laboratory qualifier - See Attachment 2 for definitions
% = percent

**EVENT 1 FIELD DUPLICATE - SEMIVOLATILES-SIM**
**PR1**DUP-01B**

**QAPP Worksheet #11-1**
**Project Quality Objectives/Systematic Planning Process Statements (Phase I)**
**Phase I Data Comparison Chart**

| SVOC SIM Sample Collection Techniques | Sample Collection Quality[a] | | | Analytical Quality[b] | Identification of Target Analytes | | |
|---|---|---|---|---|---|---|---|
| | Were specified sample aliquots obtained meeting all analytical needs? | | | Are fewer than 3 results "R" qualified (rejected due to association with severe data quality issues)? | Number of COPCs/COPECs[c] listed in the FFS identified? | Are at least 2 more COPCs/COPECs[c] identified in another sample type? | If no single sample types being compared was significantly[d] different in the number of COPCs/COPECs[c] identified (distinguished by a single "no" in the previous column), are the overall number of target analytes identified significantly[e] different? |
| | Attempt 1 | Attempt 2 | Attempt 3 | | | | |
| Whole Water | Yes | Yes | NA | Yes | 9 | Yes | NA |
| LSM dissolved plus LSM particulate | Yes | Yes | NA | Yes | 11 | Yes | NA |
| HSM dissolved plus HSM particulate | Yes | Yes | NA | Yes | 14 | No | NA |
| LSM dissolved | Yes | Yes | NA | Yes | 4 | No | Yes |
| HSM dissolved | Yes | Yes | NA | Yes | 5 | | Yes |
| LSM particulate | Yes | Yes | NA | Yes | 7 | Yes | NA |
| HSM particulate | No | Yes | NA | Yes | 12 | | NA |

See footnotes on the last page

**Positive Target Analyte Identification and Concentration Comparison[f]**

| Analyte Identified | PR1WWDUP-01B Whole Water[g] (µg/L) | LQ[h] | VQ | PR1LDDUP-01B LSM Dissolved[g] (µg/L) | LQ[h] | VQ | PR1HDDUP-01B HSM Dissolved[g] (µg/L) | LQ[h] | VQ | % RPD | PR1LPDUP-01B LSM Particulate[g] (µg/kg) | LQ[h] | VQ | PR1HPDUP-01B HSM Particulate[g] (µg/kg) | LQ[h] | VQ | % RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | 0.30 | BD | J | 0.37 | DB | | 0.23 | DB | J | **46.7** | | | | | | | |
| 2-Methylnaphthalene | 0.40 | BD | J | 0.44 | D | | 0.31 | DB | J | **34.7** | | | | 71 | DB | J | |
| Acenaphthene | | | | 0.020 | D | | | | | | | | | | | | |
| Fluorene | 0.028 | BD | J | 0.022 | D | | 0.020 | DB | J | | | | | | | | |
| Phenanthrene | 0.097 | BD | J | | | | 0.063 | DB | J | | | | | 300 | DB | J | |
| Fluoranthene | 0.12 | BD | J | | | | | | | | 1600 | DB | J | 770 | DB | J | **70.0** |
| Pyrene | 0.14 | BD | J | | | | 0.069 | DB | J | | 1000 | DB | J | 680 | DB | J | **38.1** |
| Benzo(a)anthracene | | | | | | | | | | | | | | 310 | D | J | |
| Chrysene | | | | | | | | | | | | | | 410 | D | J | |
| Benzo(b)fluoranthene | 0.042 | BD | J | | | | | | | | 880 | D | | 390 | D | J | **77.2** |
| Benzo(k)fluoranthene | 0.043 | BD | J | | | | | | | | 720 | D | | 290 | D | J | **85.1** |
| Benzo(a)pyrene | 0.033 | BD | J | | | | | | | | 540 | D | | 280 | D | J | **63.4** |
| Indeno(1,2,3-cd)pyrene | | | | | | | | | | | 300 | D | | 180 | D | J | **50.0** |
| Dibenzo(a,h)anthracene | | | | | | | | | | | | | | 66 | D | J | |
| Benzo(g,h,i)perylene | | | | | | | | | | | 340 | D | | 220 | D | J | **42.9** |
| 1-Methylnaphthalene | 0.26 | BD | J | 0.31 | D | | 0.21 | DB | J | **38.5** | | | | | | | |
| Benzo[e]pyrene | 0.029 | BD | J | | | | | | | | 550 | D | | 270 | D | J | **68.3** |
| Perylene | | | | | | | | | | | | | | 77 | D | J | |
| 3,6-Dimethylphenanthrene | | | | | | | | | | | 330 | D | | | | | |
| 1-Methylanthracene | 0.040 | BD | J | 0.030 | D | J | 0.043 | DB | J | **35.6** | 630 | D | J | 91 | D | J | **150** |
| 1-Methylfluoranthene | | | | | | | | | | | 320 | D | | 110 | D | J | **97.7** |
| 2,6-Dimethylnaphthalene | 0.15 | BD | J | 0.10 | D | | 0.12 | DB | J | **18.2** | 450 | D | | 100 | D | J | **127** |
| 2,3,5-Trimethylnaphthalene | 0.083 | BD | J | 0.054 | D | | 0.074 | DB | J | **31.3** | 700 | D | | 76 | D | J | **161** |
| 1-Methylphenanthrene | 0.082 | BD | J | 0.037 | D | | 0.061 | DB | J | **49.0** | | | | | | | |
| Dibenzothiophene | 0.028 | BD | J | | | | 0.025 | DB | J | | | | | | | | |

[a] A "NA" in one of the Attempt columns indicates that the analytical group had already been collected in a previous attempt and was not intended to be collected during that column's attempt.

[b] Analytical quality is based upon the program 90% analytical completeness objectives.

[c] COPCs/COPECs listed in the FFS: Naphthalene, Fluorene, Pyrene, Benzo(k)fluoranthene, Benzo(g,h,i)perylene, 2-methylnaphthalene, Phenanthrene, Benzo(a)anthracene, Benzo(a)pyrene, Acenaphthylene, Anthracene, Chrysene, Indeno(1,2,3-cd)pyrene, Acenaphthene, Fluoranthene, Benzo(b)fluoranthene, and Dibenzo(a,h)anthracene.

[d] At least 2 more

[e] Fewer than 3

[f] Positive target analyte identification and concentration comparison chart will comprise the detected analytes from the full target analyte list. Additional pages may be necessary.

[g] No rejected data.

[h] A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate. Values associated with a "G" qualifier are quantitatiovely less certain than those not associated with a "G" qualifier. This is because "G" qualified results fall below the low point of the calibration curve.

Notes:

COPCs = contaminants of potential concern
COPECs = contaminants of potential ecological concern
FFS = focused fesability study
HSM = high-solids mass
LSM = low-solids mass

LQ = laboratory qualifier - See Attachment 1 for definitions
RPD = relative percent difference
SIM = selective ion monitoring
SVOC = semivolatile organic compound
µg/L = micrograms per liter

µg/kg = micrograms per kilograms
VQ = laboratory qualifier - See Attachment 2 for definitions
% = percent

**EVENT 2 ORIGINAL SAMPLE - SEMIVOLATILES-SIM**
**PR1CSOCLY**-02B**

**QAPP Worksheet #11-1**
**Project Quality Objectives/Systematic Planning Process Statements (Phase I)**
**Phase I Data Comparison Chart**

| SVOC SIM Sample Collection Techniques | Sample Collection Quality[a] | | | Analytical Quality[b] | Identification of Target Analytes | | |
|---|---|---|---|---|---|---|---|
| | Were specified sample aliquots obtained meeting all analytical needs? | | | Are fewer than 3 results "R" qualified (rejected due to association with severe data quality issues)? | Number of COPCs/COPECs[c] listed in the FFS identified? | Are at least 2 more COPCs/COPECs[c] identified in another sample type? | If no single sample types being compared was significantly[d] different in the number of COPCs/COPECs[c] identified (distinguished by a single "no" in the previous column), are the overall number of target analytes identified significantly[e] different? |
| | Attempt 1 | Attempt 2 | Attempt 3 | | | | |
| Whole Water | No | Yes | NA | Yes | 15 | Yes | NA |
| LSM dissolved plus LSM particulate | No | Yes | NA | Yes | 16 | No | No |
| HSM dissolved plus HSM particulate | No | Yes | NA | Yes | 17 | No | No |
| LSM dissolved | No | Yes | NA | Yes | 16 | Yes | NA |
| HSM dissolved | No | Yes | NA | Yes | 14 | | NA |
| LSM particulate | No | Yes | NA | Yes | 13 | Yes | NA |
| HSM particulate | No | Yes | NA | Yes | 16 | | NA |

See footnotes on the last page

**Positive Target Analyte Identification and Concentration Comparison[f]**

| Analyte Identified | PR1CSOCLYWW-02B Whole Water[g] (µg/L) | LQ[h] | VQ | PR1CSOCLYLD-02B LSM Dissolved[g] (µg/L) | LQ[h] | VQ | PR1CSOCLYHD-02B HSM Dissolved[g] (µg/L) | LQ[h] | VQ | % RPD | PR1CSOCLYLP-02B LSM Particulate[g] (µg/kg) | LQ[h] | VQ | PR1CSOCLYHP-02B HSM Particulate[g] (µg/kg) | LQ[h] | VQ | % RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | | | | 0.051 | B | J | 0.035 | BD | J | **37.2** | | | | 90 | BD | J | |
| 2-Methylnaphthalene | 0.044 | D | J | | | | 0.052 | D | | | | | | 76 | D | M | |
| Acenaphthylene | 0.0055 | GD | J | 0.0058 | | J | 0.0025 | GD | | **79.5** | 480 | G | J | | | | |
| Acenaphthene | 0.013 | D | J | 0.014 | | | 0.015 | D | | **6.90** | | | | 52 | D | M | |
| Fluorene | 0.026 | D | J | 0.021 | | | 0.030 | D | | **35.3** | | | | 80 | D | M | |
| Phenanthrene | 0.065 | D | J | 0.038 | B | | 0.064 | D | | **51.0** | 2500 | B | J | 790 | BD | M | **104** |
| Anthracene | 0.013 | D | J | 0.015 | | | 0.011 | D | | **30.8** | 870 | | J | 100 | D | M | **159** |
| Fluoranthene | 0.082 | D | J | 0.039 | B | J | 0.069 | D | | **55.6** | 9100 | | J | 1000 | D | M | **160** |
| Pyrene | 0.066 | D | J | 0.026 | B | JL | 0.056 | D | | **73.2** | 8400 | | J | 940 | D | M | **160** |
| Benzo(a)anthracene | 0.032 | D | J | 0.0074 | | JL | 0.023 | D | | **103** | 6700 | | J | 580 | D | M | **168** |
| Chrysene | 0.050 | D | J | 0.014 | | JL | 0.034 | D | | **83.3** | 8600 | | J | 940 | D | M | **161** |
| Benzo(b)fluoranthene | 0.047 | D | J | 0.0081 | | JL | 0.033 | D | | **121** | 7200 | | J | 830 | D | M | **159** |
| Benzo(k)fluoranthene | 0.039 | D | J | 0.0061 | | JL | 0.029 | D | | **130** | 8500 | | J | 750 | D | M | **168** |
| Benzo(a)pyrene | 0.030 | D | J | 0.0040 | G | JL | 0.020 | D | | **133** | 6600 | | J | 560 | D | M | **169** |
| Indeno(1,2,3-cd)pyrene | 0.012 | D | J | 0.0021 | G | JL | | | | | 5100 | | J | 540 | D | M | **162** |
| Dibenzo(a,h)anthracene | | | | 0.00075 | G | JL | | | | | 1800 | | J | 200 | D | M | **160** |
| Benzo(g,h,i)perylene | 0.012 | D | J | 0.0028 | G | JL | | | | | 6200 | | J | 650 | D | M | **162** |
| 1-Methylnaphthalene | 0.041 | D | J | 0.063 | | J | 0.053 | D | | **17.2** | | | | 54 | D | M | |
| Benzo[e]pyrene | 0.031 | D | J | 0.0059 | | JL | 0.021 | D | | **112** | 7300 | | J | 650 | D | M | **167** |
| Perylene | 0.0089 | D | J | 0.00082 | G | JL | 0.0054 | GD | | **147** | 2000 | | J | 170 | D | M | **169** |
| 3,6-Dimethylphenanthrene | 0.0085 | GD | J | 0.0035 | GB | JL | 0.011 | D | | **103** | 500 | | J | 53 | D | M | **162** |
| 1-Methylanthracene | 0.016 | D | J | 0.0087 | | | 0.022 | D | | **86.6** | 1700 | | J | 110 | D | M | **176** |
| 1-Methylfluoranthene | 0.019 | D | J | 0.0072 | | | 0.016 | D | | **75.9** | 2700 | | J | 260 | D | M | **165** |
| 1-Methylpyrene | 0.0063 | GD | J | 0.0024 | G | | 0.0068 | GD | | **95.7** | 840 | | J | 74 | D | M | **168** |
| 2,6-Dimethylnaphthalene | 0.069 | D | J | 0.053 | | J | 0.092 | D | | **53.8** | | | | 70 | D | M | |
| 2,3,5-Trimethylnaphthalene | 0.044 | D | J | 0.036 | | J | 0.052 | D | J | **36.4** | 350 | G | J | 53 | D | M | **147** |
| Dibenzofuran | | | | 0.0073 | | | 0.016 | D | | **74.7** | | | | 48 | D | M | |
| 1-Methylphenanthrene | 0.025 | D | J | 0.0069 | | | 0.036 | D | | **136** | 400 | G | J | 94 | D | M | **124** |
| Dibenzothiophene | 0.011 | D | J | 0.011 | | | 0.018 | D | | **48.3** | | | | 52 | D | M | |

[a] A "NA" in one of the Attempt columns indicates that the analytical group had already been collected in a previous attempt and was not intended to be collected during that column's attempt.

[b] Analytical quality is based upon the program 90% analytical completeness objectives.

[c] COPCs/COPECs listed in the FFS: Naphthalene, Fluorene, Pyrene, Benzo(k)fluoranthene, Benzo(g,h,i)perylene, 2-methylnaphthalene, Phenanthrene, Benzo(a)anthracene, Benzo(a)pyrene, Acenaphthylene, Anthracene, Chrysene, Indeno(1,2,3-cd)pyrene, Acenaphthene, Fluoranthene, Benzo(b)fluoranthene, and Dibenzo(a,h)anthracene.

[d] At least 2 more

[e] Fewer than 3

[f] Positive target analyte identification and concentration comparison chart will comprise the detected analytes from the full target analyte list. Additional pages may be necessary.

[g] No rejected data.

[h] A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate. Values associated with a "G" qualifier are quantitatiovely less certain than those not associated with a "G" qualifier. This is because "G" qualified results fall below the low point of the calibration curve.

Notes:

COPCs = contaminants of potential concern
COPECs = contaminants of potential ecological concern
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LSM = low-solids mass
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RPD = relative percent difference
SIM = selective ion monitoring
SVOC = semivolatile organic compound
µg/L = micrograms per liter
µg/kg = micrograms per kilograms
VQ = laboratory qualifier - See Attachment 2 for definitions
% = percent

**EVENT 2 FIELD DUPLICATE - SEMIVOLATILES-SIM**
**PR1**DUP-02B**

**QAPP Worksheet #11-1**
**Project Quality Objectives/Systematic Planning Process Statements (Phase I)**
**Phase I Data Comparison Chart**

| SVOC SIM Sample Collection Techniques | Sample Collection Quality[a] | | | Analytical Quality[b] | Identification of Target Analytes | | |
|---|---|---|---|---|---|---|---|
| | Were specified sample aliquots obtained meeting all analytical needs? | | | Are fewer than 3 results "R" qualified (rejected due to association with severe data quality issues)? | Number of COPCs/COPECs[c] listed in the FFS identified? | Are at least 2 more COPCs/COPECs[c] identified in another sample type? | If no single sample types being compared was significantly[d] different in the number of COPCs/COPECs[c] identified (distinguished by a single "no" in the previous column), are the overall number of target analytes identified significantly[e] different? |
| | Attempt 1 | Attempt 2 | Attempt 3 | | | | |
| Whole Water | No | Yes | NA | Yes | 17 | No | No |
| LSM dissolved plus LSM particulate | No | Yes | NA | Yes | 16 | No | No |
| HSM dissolved plus HSM particulate | No | Yes | NA | Yes | 17 | No | No |
| LSM dissolved | No | Yes | NA | Yes | 15 | Yes | NA |
| HSM dissolved | No | Yes | NA | Yes | 13 | | NA |
| LSM particulate | No | Yes | NA | Yes | 14 | Yes | NA |
| HSM particulate | No | Yes | NA | Yes | 16 | | NA |

See footnotes on the last page

**Positive Target Analyte Identification and Concentration Comparison[f]**

| Analyte Identified | PR1WWDUP-02B Whole Water[g] (µg/L) | LQ[h] | VQ | PR1LDDUP-02B LSM Dissolved[g] (µg/L) | LQ[h] | VQ | PR1HDDUP-02B HSM Dissolved[g] (µg/L) | LQ[h] | VQ | % RPD | PR1LPDUP-02B LSM Particulate[g] (µg/kg) | LQ[h] | VQ | PR1HPDUP-02B HSM Particulate[g] (µg/kg) | LQ[h] | VQ | % RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | 0.23 | DB | J | 0.037 | B | JL | | | | | | | | 410 | BD | J | |
| 2-Methylnaphthalene | 0.25 | D | J | | | | 0.049 | D | | | | | | 73 | D | M | |
| Acenaphthylene | 0.057 | GD | J | 0.018 | | JL | 0.003 | GD | | 143 | 2500 | GD | J | | | | |
| Acenaphthene | 0.12 | D | J | 0.0072 | | JL | 0.013 | D | | 57.4 | | | | 40 | D | M | |
| Fluorene | 0.18 | D | J | 0.014 | | JL | 0.028 | D | | 66.7 | 6900 | D | J | 66 | D | M | 196 |
| Phenanthrene | 1.5 | D | J | 0.044 | B | JL | 0.060 | D | | 30.8 | 65000 | DB | J | 590 | BD | M | 196 |
| Anthracene | 0.29 | D | J | 0.012 | | JL | 0.0089 | D | | 29.7 | 10000 | D | J | 82 | D | M | 197 |
| Fluoranthene | 2.9 | D | J | 0.031 | B | J | 0.060 | D | | 63.7 | 130000 | D | J | 1100 | D | M | 197 |
| Pyrene | 1.8 | D | J | 0.019 | B | | 0.058 | D | | 101 | 91000 | D | J | 810 | D | M | 196 |
| Benzo(a)anthracene | 1.2 | D | J | 0.0033 | G | | 0.020 | D | | 143 | 54000 | D | J | 470 | D | M | 197 |
| Chrysene | 1.7 | D | J | 0.0083 | | | 0.032 | D | | 118 | 83000 | D | J | 770 | D | M | 196 |
| Benzo(b)fluoranthene | 1.8 | D | J | 0.0035 | G | | 0.032 | D | | 161 | 82000 | D | J | 720 | D | M | 197 |
| Benzo(k)fluoranthene | 1.3 | D | J | 0.0022 | G | | 0.026 | D | | 169 | 64000 | D | J | 630 | D | M | 196 |
| Benzo(a)pyrene | 1.3 | D | J | 0.0018 | G | | 0.018 | D | | 164 | 56000 | D | J | 470 | D | M | 197 |
| Indeno(1,2,3-cd)pyrene | 1.1 | D | J | 0.0010 | G | | | | | | 44000 | D | J | 420 | D | M | 196 |
| Dibenzo(a,h)anthracene | 0.38 | D | J | | | | | | | | 16000 | D | J | 150 | D | M | 196 |
| Benzo(g,h,i)perylene | 1.3 | D | J | 0.0016 | G | | | | | | 55000 | D | J | 540 | D | M | 196 |
| 1-Methylnaphthalene | 0.17 | D | J | 0.034 | | JL | 0.047 | D | | 32.1 | | | | 49 | D | M | |
| Benzo[e]pyrene | 1.3 | D | J | 0.0026 | G | | 0.019 | D | | 152 | 61000 | D | J | 570 | D | M | 196 |
| Perylene | 0.38 | D | J | 0.00051 | G | | 0.0058 | GD | | 168 | 15000 | D | J | 140 | D | M | 196 |
| 3,6-Dimethylphenanthrene | 0.13 | D | J | 0.0028 | GB | JL | 0.0095 | D | | 109 | 4300 | GD | J | 37 | D | M | 197 |
| 1-Methylanthracene | 0.27 | D | J | 0.0049 | | JL | 0.016 | D | | 106 | 15000 | D | J | 80 | D | M | 198 |
| 1-Methylfluoranthene | 0.46 | D | J | 0.0036 | G | | 0.013 | D | | 113 | 24000 | D | J | 210 | D | M | 197 |
| 1-Methylpyrene | 0.13 | D | J | 0.0014 | G | | 0.0061 | GD | | 125 | 7100 | D | J | 64 | D | M | 196 |
| 2,6-Dimethylnaphthalene | 0.21 | D | J | 0.027 | | JL | 0.087 | D | | 105 | 5400 | D | J | 77 | D | M | 194 |
| 2,3,5-Trimethylnaphthalene | 0.18 | D | J | 0.014 | | JL | 0.011 | D | J | 24.0 | 7500 | GD | J | 60 | D | M | 197 |
| 1,1'-Biphenyl | | | | 0.0049 | | JL | | | | | | | | | | | |
| Dibenzofuran | 0.12 | D | J | 0.0046 | | JL | 0.0094 | D | | 68.6 | | | | 37 | D | M | 200 |
| 1-Methylphenanthrene | 0.14 | D | J | 0.0057 | | JL | 0.032 | D | | 140 | 10000 | D | J | 120 | D | M | 195 |
| Dibenzothiophene | 0.13 | D | J | 0.015 | | JL | 0.016 | D | | 6.45 | 3700 | GD | J | 32 | GD | M | 197 |

[a] A "NA" in one of the Attempt columns indicates that the analytical group had already been collected in a previous attempt and was not intended to be collected during that column's attempt.

[b] Analytical quality is based upon the program 90% analytical completeness objectives.

[c] COPCs/COPECs listed in the FFS: Naphthalene, Fluorene, Pyrene, Benzo(k)fluoranthene, Benzo(g,h,i)perylene, 2-methylnaphthalene, Phenanthrene, Benzo(a)anthracene, Benzo(a)pyrene, Acenaphthylene, Anthracene, Chrysene, Indeno(1,2,3-cd)pyrene, Acenaphthene, Fluoranthene, Benzo(b)fluoranthene, and Dibenzo(a,h)anthracene.

[d] At least 2 more

[e] Fewer than 3

[f] Positive target analyte identification and concentration comparison chart will comprise the detected analytes from the full target analyte list. Additional pages may be necessary.

[g] No rejected data.

[h] A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate. Values associated with a "G" qualifier are quantitatiovely less certain than those not associated with a "G" qualifier. This is because "G" qualified results fall below the low point of the calibration curve.

Notes:

COPCs = contaminants of potential concern
COPECs = contaminants of potential ecological concern
FFS = focused fesability study
HSM = high-solidsmass
LSM = low-solids mass
LQ = laboratory qualifier - See Attachment 1 for definitions
RPD = relative percent difference
SIM = selective ion monitoring
SVOC = semivolatile organic compound
µg/L = micrograms per liter
µg/kg = micrograms per kilograms
VQ = laboratory qualifier - See Attachment 2 for definitions
% = percent

# Appendix L

Detailed Evaluation Sheets (Worksheet #11) – Chlorinated Herbicides

**EVENT 1 ATTEMPT 2 ORIGINAL SAMPLE - CHLORINATED HERBICIDES**
**PR1SCOCLY**-01B**

**QAPP Worksheet #11-1**
**Project Quality Objectives/Systematic Planning Process Statements (Phase I)**
**Phase I Data Comparison Chart**

| Chlorinated Herbicides Sample Collection Technique | Sample Collection Quality[a] | | | Analytical Quality[b] | Identification of Target Analytes | |
|---|---|---|---|---|---|---|
| | Were specified sample aliquots obtained meeting all analytical needs? | | | Is fewer than 1 result "R" qualified (rejected due to association with severe data quality issues)? | Number of target analytes identified? | Does the sample collection technique have at least one more target analyte identified than the other sample collection technique? |
| | Attempt 1 | Attempt 2 | Attempt 3 | | | |
| Whole Water | Yes | Yes | Yes | Yes | 0 | No |
| LSM dissolved plus LSM particulate | Yes | Yes | Yes | Yes | 2 | Yes |
| HSM dissolved plus HSM particulate | Yes | Yes | Yes | Yes | 1 | No |
| LSM dissolved | Yes | Yes | Yes | Yes | 2 | Yes |
| HSM dissolved | Yes | Yes | Yes | Yes | 0 | No |
| LSM particulate | Yes | Yes | Yes | Yes | 0 | No |
| HSM particulate | No | Yes | Yes | Yes | 1 | Yes |

**Positive Target Analyte Identification and Concentration Comparison[c]**

| Analyte Identified | PR1SCOCLYWW-01B Whole Water[d] (µg/L) | LQ[e] | VQ | PR1CSOCLYLD-01B LSM Dissolved[d] (µg/L) | LQ[e] | VQ | PR1CSOCLYHD-01B HSM Dissolved[d] (µg/L) | LQ[e] | VQ | % RPD | PR1CSOCLYLP-01B LSM Particulate[d] (µg/kg) | LQ[e] | VQ | PR1CSOCLYHP-01B HSM Particulate[d] (µg/kg) | LQ[e] | VQ | % RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,4-DB | | | | 0.45 | | NJ | | | | | | | | | | | |
| 2,4,5-T | | | | | | | | | | | | | | 24 | G | JL | |
| Silvex (2,4,5-TP) | | | | 0.02 | | J | | | | | | | | | | | |

There are no COPCs/COPECs in the target analyte list for chlorinated herbicides.

[a] A "NA" in one of the Attempt columns indicates that the analytical group had already been collected in a previous attempt and was not intended to be collected during that column's attempt.

[b] Analytical quality is based upon the program 90% analytical completeness objectives.

[c] This target analyte identification and concentration comparison chart will comprise the detected analytes from the full target analyte list. Additional pages may be necessary.

[d] No rejected data.

[e] A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate. Values associated with a "G" qualifier are quantitatively less certain than those not associated with a "G" qualifier. This is because "G" qualified results fall below the low point of the calibration curve.

Notes:
COPCs = contaminants of potential concern
COPECs = contaminants of potential ecological concern
HSM = high-solids mass
LSM = low-solids mass
LQ = laboratory qualifier - See Attachment 1 for definitions
RPD = relative percent difference
µg/L = micrograms per liter
µg/kg = micrograms per kilograms
VQ = validation qualifier - See Attachment 2 for definitions
% = percent

**EVENT 1 ATTEMPT 2 FIELD DUPLICATE - CHLORINATED HERBICIDES**
**PR1**DUP-01B**

**QAPP Worksheet #11-1**
**Project Quality Objectives/Systematic Planning Process Statements (Phase I)**
**Phase I Data Comparison Chart**

| Chlorinated Herbicides Sample Collection Technique | Sample Collection Quality[a] | | | Analytical Quality[b] | Identification of Target Analytes | |
|---|---|---|---|---|---|---|
| | Were specified sample aliquots obtained meeting all analytical needs? | | | Is fewer than 1 result "R" qualified (rejected due to association with severe data quality issues)? | Number of target analytes identified? | Does the sample collection technique have at least one more target analyte identified than the other sample collection technique? |
| | Attempt 1 | Attempt 2 | Attempt 3 | | | |
| Whole Water | Yes | Yes | Yes | Yes | 0 | No |
| LSM dissolved plus LSM particulate | Yes | Yes | Yes | Yes | 1 | Yes |
| HSM dissolved plus HSM particulate | Yes | Yes | Yes | Yes | 1 | Yes |
| LSM dissolved | Yes | Yes | Yes | Yes | 1 | Yes |
| HSM dissolved | Yes | Yes | Yes | Yes | 0 | No |
| LSM particulate | Yes | Yes | Yes | Yes | 0 | No |
| HSM particulate | No | Yes | Yes | Yes | 1 | Yes |

**Positive Target Analyte Identification and Concentration Comparison[c]**

| Analyte Identified | PR1WWDUP-01B Whole Water[d] (µg/L) | LQ[e] | VQ | PR1LDDUP-01B LSM Dissolved[d] (µg/L) | LQ[e] | VQ | PR1HDDUP-01B HSM Dissolved[d] (µg/L) | LQ[e] | VQ | % RPD | PR1LPDUP-01B LSM Particulate[d] (µg/kg) | LQ[e] | VQ | PR1HPDUP-01B HSM Particulate[d] (µg/kg) | LQ[e] | VQ | % RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,4-DB | | | | 1 | | NJ | | | | | | | | | | | |
| 2,4,5-T | | | | | | | | | | | | | | 140 | G | J | |

There are no COPCs/COPECs in the target analyte list for chlorinated herbicides.
[a] A "NA" in one of the Attempt columns indicates that the analytical group had already been collected in a previous attempt and was not intended to be collected during that column's attempt.
[b] Analytical quality is based upon the program 90% analytical completeness objectives.
[c] This target analyte identification and concentration comparison chart will comprise the detected analytes from the full target analyte list. Additional pages may be necessary.
[d] No rejected data.
[e] A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate.
Values associated with a "G" qualifier are quantitatiovely less certain than those not associated with a "G" qualifier. This is because "G" qualified results fall below the low point of the calibration curve.

Notes:
COPCs = contaminants of potential concern
COPECs = contaminants of potential ecological concern
HSM = high-solidsmass
LSM = low-solids mass
LQ = laboratory qualifier - See Attachment 1 for definitions
RPD = relative percent difference
µg/L = micrograms per liter
µg/kg = micrograms per kilograms
VQ = validation qualifier - See Attachment 2 for definitions
% = percent

**EVENT 2 ORIGINAL SAMPLE - CHLORINATED HERBICIDES**
**PR1CSOCLY**-02B**

**QAPP Worksheet #11-1**
**Project Quality Objectives/Systematic Planning Process Statements (Phase I)**
**Phase I Data Comparison Chart**

| Chlorinated Herbicides Sample Collection Technique | Sample Collection Quality[a] | | | Analytical Quality[b] | Identification of Target Analytes | |
|---|---|---|---|---|---|---|
| | Were specified sample aliquots obtained meeting all analytical needs? | | | Is fewer than 1 result "R" qualified (rejected due to association with severe data quality issues)? | Number of target analytes identified? | Does the sample collection technique have at least one more target analyte identified than the other sample collection technique? |
| | Attempt 1 | Attempt 2 | Attempt 3 | | | |
| Whole Water | No | Yes | NA | Yes | 0 | No |
| LSM dissolved plus LSM particulate | No | Yes | NA | Yes | 0 | No |
| HSM dissolved plus HSM particulate | No | Yes | NA | Yes | 1 | Yes |
| LSM dissolved | No | Yes | NA | Yes | 0 | No |
| HSM dissolved | No | Yes | NA | Yes | 1 | Yes |
| LSM particulate | No | Yes | NA | Yes | 0 | No |
| HSM particulate | No | Yes | NA | Yes | 0 | No |

**Positive Target Analyte Identification and Concentration Comparison[c]**

| Analyte Identified | PR1CSOCLYWW-02B Whole Water[d] (µg/L) | LQ[e] | VQ | PR1CSOCLYLD-02B LSM Dissolved[d] (µg/L) | LQ[e] | VQ | PR1CSOLCYHD-02B HSM Dissolved[d] (µg/L) | LQ[e] | VQ | % RPD | PR1CSOCLYLP-02B LSM Particulate[d] (µg/kg) | LQ[e] | VQ | PR1CSOCLYHP-02B HSM Particulate[d] (µg/kg) | LQ[e] | VQ | % RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,4-DB | | | | | | | 0.31 | B | NJ | | | | | | | | |

There are no COPCs/COPECs in the target analyte list for chlorinated herbicides.

[a] A "NA" in one of the Attempt columns indicates that the analytical group had already been collected in a previous attempt and was not intended to be collected during that column's attempt.

[b] Analytical quality is based upon the program 90% analytical completeness objectives.

[c] This target analyte identification and concentration comparison chart will comprise the detected analytes from the full target analyte list. Additional pages may be necessary.

[d] No rejected data.

[e] A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate. Values associated with a "G" qualifier are quantitatiovely less certain than those not associated with a "G" qualifier. This is because "G" qualified results fall below the low point of the calibration curve.

Notes:
COPCs = contaminants of potential concern
COPECs = contaminants of potential ecological concern
HSM = high-solids mass
LSM = low-solids mass
LQ = laboratory qualifier - See Attachment 1 for definitions
RPD = relative percent difference
µg/L = micrograms per liter
µg/kg = micrograms per kilograms
VQ = validation qualifier - See Attachment 2 for definitions
% = percent

**EVENT 2 FIELD DUPLICATE - CHLORINATED HERBICIDES**
**PR1**DUP-02B**

**QAPP Worksheet #11-1**
**Project Quality Objectives/Systematic Planning Process Statements (Phase I)**
**Phase I Data Comparison Chart**

| Chlorinated Herbicides Sample Collection Technique | Sample Collection Quality[a] | | | Analytical Quality[b] | Identification of Target Analytes | |
|---|---|---|---|---|---|---|
| | Were specified sample aliquots obtained meeting all analytical needs? | | | Is fewer than 1 result "R" qualified (rejected due to association with severe data quality issues)? | Number of target analytes identified? | Does the sample collection technique have at least one more target analyte identified than the other sample collection technique? |
| | Attempt 1 | Attempt 2 | Attempt 3 | | | |
| Whole Water | No | Yes | NA | Yes | 0 | No |
| LSM dissolved plus LSM particulate | No | Yes | NA | Yes | 2 | Yes |
| HSM dissolved plus HSM particulate | No | Yes | NA | Yes | 0 | No |
| LSM dissolved | No | Yes | NA | Yes | 2 | Yes |
| HSM dissolved | No | Yes | NA | Yes | 0 | No |
| LSM particulate | No | Yes | NA | Yes | 0 | No |
| HSM particulate | No | Yes | NA | Yes | 0 | No |

**Positive Target Analyte Identification and Concentration Comparison[c]**

| Analyte Identified | PR1WWDUP-02B Whole Water[d] (µg/L) | LQ[e] | VQ | PR1LDDUP-02B LSM Dissolved[d] (µg/L) | LQ[e] | VQ | PR1HDDUP-02B HSM Dissolved[d] (µg/L) | LQ[e] | VQ | % RPD | PR1LPDUP-02B LSM Particulate[d] (µg/kg) | LQ[e] | VQ | PR1HPDUP-02B HSM Particulate[d] (µg/kg) | LQ[e] | VQ | % RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,4-DB | | | | 0.41 | | NJ | | | | | | | | | | | |
| 2,4,5-T | | | | 0.21 | | | | | | | | | | | | | |

There are no COPCs/COPECs in the target analyte list for chlorinated herbicides.
[a] A "NA" in one of the Attempt columns indicates that the analytical group had already been collected in a previous attempt and was not intended to be collected during that column's attempt.
[b] Analytical quality is based upon the program 90% analytical completeness objectives.
[c] This target analyte identification and concentration comparison chart will comprise the detected analytes from the full target analyte list. Additional pages may be necessary.
[d] No rejected data.
[e] A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate.
Values associated with a "G" qualifier are quantitatiovely less certain than those not associated with a "G" qualifier. This is because "G" qualified results fall below the low point of the calibration curve.

Notes:
COPCs = contaminants of potential concern
COPECs = contaminants of potential ecological concern
HSM = high-solids mass
LSM = low-solids mass
LQ = laboratory qualifier - See Attachment 1 for definitions
RPD = relative percent difference
µg/L = micrograms per liter
µg/kg = micrograms per kilograms
VQ = validation qualifier - See Attachment 2 for definitions
% = percent

**EVENT 1 ATTEMPT 3 ORIGINAL SAMPLE - CHLORINATED HERBICIDES**
**PR1CSOCLY**-01C**

**QAPP Worksheet #11-1**
**Project Quality Objectives/Systematic Planning Process Statements (Phase I)**
**Phase I Data Comparison Chart**

| Chlorinated Herbicides Sample Collection Technique | Sample Collection Quality[a] | | | Analytical Quality[b] | Identification of Target Analytes | |
|---|---|---|---|---|---|---|
| | Were specified sample aliquots obtained meeting all analytical needs? | | | Is fewer than 1 result "R" qualified (rejected due to association with severe data quality issues)? | Number of target analytes identified? | Does the sample collection technique have at least one more target analyte identified than the other sample collection technique? |
| | Attempt 1 | Attempt 2 | Attempt 3 | | | |
| Whole Water | Yes | Yes | Yes | Yes | 4 | Yes |
| LSM dissolved plus LSM particulate | Yes | Yes | Yes | Yes | 2 | No |
| HSM dissolved plus HSM particulate | Yes | Yes | Yes | Yes | 4 | Yes |
| LSM dissolved | Yes | Yes | Yes | Yes | 2 | No |
| HSM dissolved | Yes | Yes | Yes | Yes | 4 | Yes |
| LSM particulate | Yes | Yes | Yes | Yes | 0 | No |
| HSM particulate | No | Yes | Yes | Yes | 0 | No |

**Positive Target Analyte Identification and Concentration Comparison[c]**

| Analyte Identified | PR1CSOCLYWW-01C Whole Water[d] (µg/L) | LQ[e] | VQ | PR1CSOCLYLD-01C LSM Dissolved[d] (µg/L) | LQ[e] | VQ | PR1CSOCLYHD-01C HSM Dissolved[d] (µg/L) | LQ[e] | VQ | % RPD | PR1CSOCLYLP-01C LSM Particulate[d] (µg/kg) | LQ[e] | VQ | PR1CSOCLPHP-01C HSM Particulate[d] (µg/kg) | LQ[e] | VQ | % RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,4-D | 0.36 | B | NJ | 0.47 | B | | 0.40 | B | | 16.1 | | | | | | | |
| 2,4-DB | 0.59 | B | | | | | 0.47 | B | NJ | | | | | | | | |
| 2,4,5-T | 0.10 | G | NJ | 0.09 | G | NJ | 0.022 | G | NJ | 123 | | | | | | | |
| Silvex (2,4,5-TP) | 0.051 | B | | | | | 0.023 | B | | | | | | | | | |

There are no COPCs/COPECs in the target analyte list for chlorinated herbicides.

[a] A "NA" in one of the Attempt columns indicates that the analytical group had already been collected in a previous attempt and was not intended to be collected during that column's attempt.

[b] Analytical quality is based upon the program 90% analytical completeness objectives.

[c] This target analyte identification and concentration comparison chart will comprise the detected analytes from the full target analyte list. Additional pages may be necessary.

[d] No rejected data.

[e] A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate.
Values associated with a "G" qualifier are quantitatiovely less certain than those not associated with a "G" qualifier. This is because "G" qualified results fall below the low point of the calibration curve.

Notes:
COPCs = contaminants of potential concern
COPECs = contaminants of potential ecological concern
HSM = high-solidsmass
LSM = low-solids mass
LQ = laboratory qualifier - See Attachment 1 for definitions
RPD = relative percent difference
µg/L = micrograms per liter
µg/kg = micrograms per kilograms
VQ = validation qualifier - See Attachment 2 for definitions
% = percent

**EVENT 1 ATTEMPT 3 DUPLICATE SAMPLE - CHLORINATED HERBICIDES**
**PR1**DUP-01C**

**QAPP Worksheet #11-1**
**Project Quality Objectives/Systematic Planning Process Statements (Phase I)**
**Phase I Data Comparison Chart**

| Chlorinated Herbicides Sample Collection Technique | Sample Collection Quality[a] | | | Analytical Quality[b] | Identification of Target Analytes | |
|---|---|---|---|---|---|---|
| | Were specified sample aliquots obtained meeting all analytical needs? | | | Is fewer than 1 result "R" qualified (rejected due to association with severe data quality issues)? | Number of target analytes identified? | Does the sample collection technique have at least one more target analyte identified than the other sample collection technique? |
| | Attempt 1 | Attempt 2 | Attempt 3 | | | |
| Whole Water | Yes | Yes | Yes | Yes | 4 | Yes |
| LSM dissolved plus LSM particulate | Yes | Yes | Yes | Yes | 4 | Yes |
| HSM dissolved plus HSM particulate | Yes | Yes | Yes | Yes | 3 | No |
| LSM dissolved | Yes | Yes | Yes | Yes | 4 | Yes |
| HSM dissolved | Yes | Yes | Yes | Yes | 3 | No |
| LSM particulate | Yes | Yes | Yes | Yes | 0 | No |
| HSM particulate | No | Yes | Yes | Yes | 0 | No |

**Positive Target Analyte Identification and Concentration Comparison[c]**

| Analyte Identified | PR1WWDUP-01C Whole Water[d] (µg/L) | LQ[e] | VQ | PR1LDDUP-01C LSM Dissolved[d] (µg/L) | LQ[e] | VQ | PR1HDDUP-01C HSM Dissolved[d] (µg/L) | LQ[e] | VQ | % RPD | PR1LPDUP-01C LSM Particulate[d] (µg/kg) | LQ[e] | VQ | PR1HPDUP-01C HSM Particulate[d] (µg/kg) | LQ[e] | VQ | % RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,4-D | 0.48 | B | | 0.51 | B | JH | 0.41 | B | | 21.7 | | | | | | | |
| 2,4-DB | 0.28 | B | NJ | 0.44 | B | NJ | | | | | | | | | | | |
| 2,4,5-T | 0.1 | | NJ | 0.07 | G | NJ | 0.054 | G | NJ | 31.3 | | | | | | | |
| Silvex (2,4,5-TP) | 0.032 | B | NJ | 0.021 | B | JH | 0.021 | B | NJ | 0.00 | | | | | | | |

There are no COPCs/COPECs in the target analyte list for chlorinated herbicides.
[a] A "NA" in one of the Attempt columns indicates that the analytical group had already been collected in a previous attempt and was not intended to be collected during that column's attempt.
[b] Analytical quality is based upon the program 90% analytical completeness objectives.
[c] This target analyte identification and concentration comparison chart will comprise the detected analytes from the full target analyte list. Additional pages may be necessary.
[d] No data rejected.
[e] A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate. Values associated with a "G" qualifier are quantitatiovely less certain than those not associated with a "G" qualifier. This is because "G" qualified results fall below the low point of the calibration curve.

Notes:
COPCs = contaminants of potential concern
COPECs = contaminants of potential ecological concern
HSM = high-solids mass
LSM = low-solids mass
LQ = laboratory qualifier - See Attachment 1 for definitions
RPD = relative percent difference
µg/L = micrograms per liter
µg/kg = micrograms per kilograms
VQ = validation qualifier - See Attachment 2 for definitions
% = percent

# Appendix M

Detailed Evaluation Sheets (Worksheet #11) – Cyanide

**EVENT 1 ORIGINAL SAMPLE - CYANIDE**
**PR1CSOCLY**-01B**

**QAPP Worksheet #11-1**
**Project Quality Objectives/Systematic Planning Process Statements (Phase I)**
**Phase I Data Comparison Chart**

| Cyanide Sample Collecton Techniques | Sample Collection Quality[a] | | | Analytical Quality[b] | Identification of Target Analytes |
|---|---|---|---|---|---|
| | Were specified sample aliquots obtained meeting all analytical needs? | | | Is the cyanide result free of any "R" flag (rejected due to association with severe data quality issues)? | Was cyanide positively identified? |
| | Attempt 1 | Attempt 2 | Attempt 3 | | |
| Whole Water | Yes | Yes | NA | Yes | Yes (1) |
| HSM dissolved plus HSM particulate[c] | No | Yes | NA | Yes | Yes (1) |

**Positive Target Analyte Identification and Concentration Comparison[d]**

| Analyte Identified | PR1CSOCLYWW-01B Whole Water[e] Concentration (µg/L) | LQ | VQ | PR1CSOCLYHD-01B HSM Dissolved[e] Concentration (µg/L) | LQ | VQ | PR1CSOCLYHP-01B HSM Particulate[ce] Concentration (mg/Kg) | LQ | VQ |
|---|---|---|---|---|---|---|---|---|---|
| Cyanide | 29.3 | | | 31.3 | | | 5.8 | | J |

There are no COPC/COPECs in the target list for Cyanide.

[a] A "NA" in one of the Attempt columns indicates that the analytical group had already been collected in a previous attempt and was not intended to be collected during that column's attempt.

[b] Analytical quality is based upon the program 90% analytical completeness objectives.

[c] HSM particulate based on a composite of debris and fines.

[d] Positive target analyte identification and concentration comparison chart will comprise the detected analytes from the full target analyte list.

[e] No rejected data.

Notes:

COPCs = contaminants of potential concern
COPECs = contaminants of potential ecological concern
HSM = high-solids mass
LQ = laboratory qualifier - See Attachment 1 for definitions
µg = micrograms
VQ = laboratory qualifier - See Attachment 2 for definitions

## EVENT 1 FIELD DUPLICATE - CYANIDE
## PR1**DUP-01B

### QAPP Worksheet #11-1
### Project Quality Objectives/Systematic Planning Process Statements (Phase I)
### Phase I Data Comparison Chart

| Cyanide Sample Collecton Techniques | Sample Collection Quality[a] | | | Analytical Quality[b] | Identification of Target Analytes |
|---|---|---|---|---|---|
| | Were specified sample aliquots obtained meeting all analytical needs? | | | Is the cyanide result free of any "R" flag (rejected due to association with severe data quality issues)? | Was cyanide positively identified? |
| | Attempt 1 | Attempt 2 | Attempt 3 | | |
| Whole Water | Yes | Yes | NA | Yes | Yes (1) |
| HSM dissolved plus HSM particulate[c] | No | Yes | NA | Yes | Yes (1) |

**Positive Target Analyte Identification and Concentration Comparison[d]**

| Analyte Identified | PR1WWDUP-01B Whole Water[e] Concentration (µg/L) | LQ | VQ | PR1HDDUP-01B HSM Dissolved[e] Concentration (µg/L) | LQ | VQ | PR1HPDUP-01B HSM Particulate[ce] Concentration (mg/Kg) | LQ | VQ |
|---|---|---|---|---|---|---|---|---|---|
| Cyanide | 27.2 | | | 31.6 | | | 6.4 | | J |

There are no COPC/COPECs in the target list for Cyanide.

[a] A "NA" in one of the Attempt columns indicates that the analytical group had already been collected in a previous attempt and was not intended to be collected during that column's attempt.

[b] Analytical quality is based upon the program 90% analytical completeness objectives.

[c] HSM particulate based on a composite of debris and fines.

[d] Positive target analyte identification and concentration comparison chart will comprise the detected analytes from the full target analyte list.

[e] No rejected data.

Notes:
COPCs = contaminants of potential concern
COPECs = contaminants of potential ecological concern
HSM = high-solids mass
LQ = laboratory qualifier - See Attachment 1 for definitions
µg = micrograms
VQ = laboratory qualifier - See Attachment 2 for definitions

**EVENT 2 ORIGINAL SAMPLE - CYANIDE**
**PR1CSOCLY**-02B**

**QAPP Worksheet #11-1**
**Project Quality Objectives/Systematic Planning Process Statements (Phase I)**
**Phase I Data Comparison Chart**

| Cyanide Sample Collecton Techniques | Sample Collection Quality[a] | | | Analytical Quality[b] | Identification of Target Analytes |
|---|---|---|---|---|---|
| | Were specified sample aliquots obtained meeting all analytical needs? | | | Is the cyanide result free of any "R" flag (rejected due to association with severe data quality issues)? | Was cyanide positively identified? |
| | Attempt 1 | Attempt 2 | Attempt 3 | | |
| Whole Water | No | Yes | NA | Yes | Yes (1) |
| HSM dissolved plus HSM particulate | No | Yes | NA | Yes | Yes (1) |

**Positive Target Analyte Identification and Concentration Comparison[c]**

| Analyte Identified | PR1CSOCLYWW-02B Whole Water[d] Concentration (µg/L) | LQ | VQ | PR1CSOCLYHD-02B HSM Dissolved[d] Concentration (µg/L) | LQ | VQ | PR1CSOCLYHP-02B HSM Particulate[d] Concentration (mg/Kg) | LQ | VQ |
|---|---|---|---|---|---|---|---|---|---|
| Cyanide | 3.8 | B | J | ND | | U | 2.4 | | M |

There are no COPC/COPECs in the target list for Cyanide.
[a] A "NA" in one of the Attempt columns indicates that the analytical group had already been collected in a previous attempt and was not intended to be collected during that column's attempt.
[b] Analytical quality is based upon the program 90% analytical completeness objectives.
[c] Positive target analyte identification and concentration comparison chart will comprise the detected analytes from the full target analyte list.
[d] No rejected data.

Notes:
COPCs = contaminants of potential concern
COPECs = contaminants of potential ecological concern
HSM = high-solids mass
LQ = laboratory qualifier - See Attachment 1 for definitions
µg = micrograms
VQ = laboratory qualifier - See Attachment 2 for definitions

**EVENT 2 FIELD DUPLICATE - CYANIDE**
**PR1**DUP-02B**

**QAPP Worksheet #11-1**
**Project Quality Objectives/Systematic Planning Process Statements (Phase I)**
**Phase I Data Comparison Chart**

| Cyanide Sample Collecton Techniques | Sample Collection Quality[a] | | | Analytical Quality[b] | Identification of Target Analytes |
|---|---|---|---|---|---|
| | Were specified sample aliquots obtained meeting all analytical needs? | | | Is the cyanide result free of any "R" flag (rejected due to association with severe data quality issues)? | Was cyanide positively identified? |
| | Attempt 1 | Attempt 2 | Attempt 3 | | |
| Whole Water | No | Yes | NA | Yes | Yes (1) |
| HSM dissolved plus HSM particulate | No | Yes | NA | Yes | Yes (1) |

**Positive Target Analyte Identification and Concentration Comparison[c]**

| Analyte Identified | PR1WWDUP-02B Whole Water[d] Concentration (µg/L) | LQ | VQ | PR1HDDUP-02B HSM Dissolved[d] Concentration (µg/L) | LQ | VQ | PR1HPDUP-02B HSM Particulate[d] Concentration (mg/Kg) | LQ | VQ |
|---|---|---|---|---|---|---|---|---|---|
| Cyanide | 2.3 | B | J | ND | | U | 1.6 | | J |

There are no COPC/COPECs in the target list for Cyanide.

[a] A "NA" in one of the Attempt columns indicates that the analytical group had already been collected in a previous attempt and was not intended to be collected during that column's attempt.

[b] Analytical quality is based upon the program 90% analytical completeness objectives.

[c] Positive target analyte identification and concentration comparison chart will comprise the detected analytes from the full target analyte list.

[d] No rejected data.

Notes:
COPCs = contaminants of potential concern
COPECs = contaminants of potential ecological concern
HSM = high-solids mass
LQ = laboratory qualifier - See Attachment 1 for definitions
µg = micrograms
VQ = laboratory qualifier - See Attachment 2 for definitions

# Appendix N

Detailed Evaluation Sheets (Worksheet #11) – VOCs

**EVENT 1 ORIGINAL SAMPLE - VOLATILE ORGANIC COMPOUND**
**PR1CSOCLY**-01B**

**QAPP Worksheet #11-1**
**Project Quality Objectives/Systematic Planning Process Statements (Phase I)**
**Phase I Data Comparison Chart**

| VOC Sample Collecton Techniques | Sample Collection Quality[a] | | | Analytical Quality[b] | Identification of Target Analytes | |
|---|---|---|---|---|---|---|
| | Were specified sample aliquots obtained meeting all analytical needs? | | | Are fewer than 2 results "R" qualified (rejected due to association with severe data quality issues)? | Number of target analytes identified? | Does the sample collection technique have at least one more target analyte identified than the other sample collection technique? |
| | Attempt 1 | Attempt 2 | Attempt 3 | | | |
| Whole Water | Yes | Yes | NA | Yes | 1 | Yes |
| HSM dissolved plus HSM particulate[c] | No | Yes | NA | No (4)[d] | NA | NA |

**Positive Target Analyte Identification and Concentration Comparison[e]**

| Analyte Identified | PR1CSOCLYWW-01B Whole Water[f] (µg/L) | LQ[g] | VQ | PR1CSOCLYHD-01B HSM Dissolved[f] (µg/L) | LQ[g] | VQ | PR1CSOCLYHP-01B HSM Particulate[c] (µg/Kg) | LQ[g] | VQ |
|---|---|---|---|---|---|---|---|---|---|
| 1,4-Dichlorobenzene | 0.24 | G | | 0.21 | G | | 47 | | J |
| Chlorobenzene | | | | | | | 1.4 | G | J |
| 1,,3-Dichlorobenzene | | | | | | | ND | U | R[h] |
| 1,2-Dichlorobenzene | | | | | | | ND | U | R[h] |
| 1,2,4-Trichlorobenzene | | | | | | | ND | U | R[h] |
| 1,2,3-Trichlorobenzene | | | | | | | ND | U | R[h] |

There are no COPC/COPECs in the target list for VOCs.

[a] A "NA" in one of the Attempt columns indicates that the analytical group had already been collected in a previous attempt and was not intended to be collected during that column's attempt.

[b] Analytical quality is based upon the program 90% analytical completeness objectives.

[c] HSM particulate based on a composite of debris and fines.

[d] Values in paretheses indicate the total number of rejected results.

[e] Positive target analyte identification and concentration comparison chart will comprise the detected analytes from the full target analyte list.

[f] No rejected data.

[g] A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate. Values associated with a "G" qualifier are quantitatiovely less certain than those not associated with a "G" qualifier. This is because "G" qualified results fall below the low point of the calibration curve.

[h] PR1CSOCLYHP-01B Data results rejected due to low internal standard recovery. Sample not used during sample collection technique evaluation.

Notes:

COPCs = contaminants of potential concern
COPECs = contaminants of potential ecological concern
HSM = high-solids mass
LQ = laboratory qualifier - See Attachment 1 for definitions
R = rejected data result
µg/L = micrograms per liter
µg/Kg = micrograms per kilogram
VQ = laboratory qualifier - See Attachment 2 for definitions
VQ = validation qualifier

**EVENT 1 FIELD DUPLICATE - VOLATILE ORGANIC COMPOUND**
**PR1**DUP-01B**

**QAPP Worksheet #11-1**
**Project Quality Objectives/Systematic Planning Process Statements (Phase I)**
**Phase I Data Comparison Chart**

| VOC Sample Collecton Techniques | Sample Collection Quality[a] | | | Analytical Quality[b] | Identification of Target Analytes | |
|---|---|---|---|---|---|---|
| | Were specified sample aliquots obtained meeting all analytical needs? | | | Are fewer than 2 results "R" qualified (rejected due to association with severe data quality issues)? | Number of target analytes identified? | Does the sample collection technique have at least one more target analyte identified than the other sample collection technique? |
| | Attempt 1 | Attempt 2 | Attempt 3 | | | |
| Whole Water | Yes | Yes | NA | Yes | 1 | Yes |
| HSM dissolved plus HSM particulate[c] | No | Yes | NA | No (4)[d] | NA | NA |

**Positive Target Analyte Identification and Concentration Comparison[e]**

| Analyte Identified | PR1WWDUP-01B Whole Water[f] (µg/L) | LQ[g] | VQ | PR1HDDUP-01B HSM Dissolved[f] (µg/L) | LQ[g] | VQ | PR1HPDUP-01B HSM Particulate[c] (µg/Kg) | LQ[g] | VQ |
|---|---|---|---|---|---|---|---|---|---|
| 1,4-Dichlorobenzene | 0.22 | G | | 0.22 | G | | 15 | | J |
| Chlorobenzene | | | | | | | 0.5 | G | J |
| 1,3-Dichlorobenzene | | | | | | | ND | U | R[h] |
| 1,2-Dichlorobenzene | | | | | | | ND | U | R[h] |
| 1,2,4-Trichlorobenzene | | | | | | | ND | U | R[h] |
| 1,2,3-Trichlorobenzene | | | | | | | ND | U | R[h] |

There are no COPC/COPECs in the target list for VOCs.

[a] A "NA" in one of the Attempt columns indicates that the analytical group had already been collected in a previous attempt and was not intended to be collected during that column's attempt.

[b] Analytical quality is based upon the program 90% analytical completeness objectives.

[c] HSM particulate based on a composite of debris and fines.

[d] Values in paretheses indicate the total number of rejected results.

[e] Positive target analyte identification and concentration comparison chart will comprise the detected analytes from the full target analyte list.

[f] No rejected data

[g] A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate. Values associated with a "G" qualifier are quantitatiovely less certain than those not associated with a "G" qualifier. This is because "G" qualified results fall below the low point of the calibration curve.

[h] PR1HPDUP-01B Data results rejected due to low internal standard recovery. Sample not used during sample collection technique evaluation.

Notes:
COPCs = contaminants of potential concern
COPECs = contaminants of potential ecological concern
HSM = high-solids mass
LQ = laboratory qualifier - See Attachment 1 for definitions
R= rejected data result
µg/L = micrograms per liter
µg/Kg = micrograms per kilogram
VQ = laboratory qualifier - See Attachment 2 for definitions
VQ = validation qualifier

**EVENT 2 ORIGINAL SAMPLE - VOLATILE ORGANIC COMPOUND**
**PR1CSOCLY**-02A**

**QAPP Worksheet #11-1**
**Project Quality Objectives/Systematic Planning Process Statements (Phase I)**
**Phase I Data Comparison Chart**

| VOC Sample Collecton Techniques | Sample Collection Quality[a] | | | Analytical Quality[b] | Identification of Target Analytes | |
|---|---|---|---|---|---|---|
| | Were specified sample aliquots obtained meeting all analytical needs? | | | Are fewer than 2 results "R" qualified (rejected due to association with severe data quality issues)? | Number of target analytes identified? | Does the sample collection technique have at least one more target analyte identified than the other sample collection technique? |
| | Attempt 1 | Attempt 2 | Attempt 3 | | | |
| Whole Water | Yes | NA | NA | Yes | 1 | Yes |
| HSM dissolved plus HSM particulate[c] | Yes | NA | NA | No (5)[d] | NA | NA |

**Positive Target Analyte Identification and Concentration Comparison[e]**

| Analyte Identified | PR1CSOCLYWW-02A Whole Water[f] (µg/L) | LQ[g] | VQ | PR1CSOCLYHD-02A HSM Dissolved[f] (µg/L) | LQ[g] | VQ | PR1CSOCLYHP-02A2 HSM Particulate[c] (µg/Kg) | LQ[g] | VQ |
|---|---|---|---|---|---|---|---|---|---|
| 1,4-Dichlorobenzene | 0.079 | G | | 0.081 | G | | | | |
| Chlorobenzene | | | | | | | ND | U | R[h] |
| 1,3-Dichlorobenzene | | | | | | | ND | U | R[h] |
| 1,4-Dichlorobenzene | | | | | | | ND | U | R[h] |
| 1,2-Dichlorobenzene | | | | | | | ND | U | R[h] |
| 1,2,3-Trichlorobenzene | | | | | | | ND | U | R[h] |

There are no COPC/COPECs in the target list for VOCs.
[a] A "NA" in one of the Attempt columns indicates that the analytical group had already been collected in a previous attempt and was not intended to be collected during that column's attempt.
[b] Analytical quality is based upon the program 90% analytical completeness objectives.
[c] HSM particulate based on a composite of debris and fines.
[d] Values in paretheses indicate the total number of rejected results.
[e] Positive target analyte identification and concentration comparison chart will comprise the detected analytes from the full target analyte list.
[f] No rejected data
[g] A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate. Values associated with a "G" qualifier are quantitatiovely less certain than those not associated with a "G" qualifier. This is because "G" qualified results fall below the low point of the calibration curve.
[h] PR1CSOCLYHP-02A2 Data results rejected due to low internal standard recovery. Sample not used during sample collection technique evaluation.

Notes:
COPCs = contaminants of potential concern
COPECs = contaminants of potential ecological concern
HSM = high-solids mass
LQ = laboratory qualifier - See Attachment 1 for definitions
R = rejected data result
µg/L = micrograms per liter
µg/Kg = micrograms per kilogram
VQ = laboratory qualifier - See Attachment 2 for definitions
VQ = validation qualifier

**EVENT 2 FIELD DUPLICATE - VOLATILE ORGANIC COMPOUND**
**PR1**DUP-02A**

**QAPP Worksheet #11-1**
**Project Quality Objectives/Systematic Planning Process Statements (Phase I)**
**Phase I Data Comparison Chart**

| VOC Sample Collecton Techniques | Sample Collection Quality[a] | | | Analytical Quality[b] | Identification of Target Analytes | |
|---|---|---|---|---|---|---|
| | Were specified sample aliquots obtained meeting all analytical needs? | | | Are fewer than 2 results "R" qualified (rejected due to association with severe data quality issues)? | Number of target analytes identified? | Does the sample collection technique have at least one more target analyte identified than the other sample collection technique? |
| | Attempt 1 | Attempt 2 | Attempt 3 | | | |
| Whole Water | Yes | NA | NA | Yes | 1 | Yes |
| HSM dissolved plus HSM particulate | Yes | NA | NA | No (4)[c] | NA | NA |

**Positive Target Analyte Identification and Concentration Comparison** [d]

| Analyte Identified | PR1WWDUP-02A Whole Water[e] (µg/L) | LQ[f] | VQ | PR1CSOCLYHD-02A HSM Dissolved[e] (µg/L) | LQ[f] | VQ | PR1HPDUP-02A2 HSM Particulate (µg/Kg) | LQ[f] | VQ |
|---|---|---|---|---|---|---|---|---|---|
| 1,4-Dichlorobenzene | 0.080 | G | | 0.078 | G | | | | |
| 1,3-Dichlorobenzene | | | | | | | ND | U | R[g] |
| 1,4-Dichlorobenzene | | | | | | | ND | U | R[g] |
| 1,2-Dichlorobenzene | | | | | | | ND | U | R[g] |
| 1,2,3-Trichlorobenzene | | | | | | | ND | U | R[g] |

There are no COPC/COPECs in the target list for VOCs.

[a] A "NA" in one of the Attempt columns indicates that the analytical group had already been collected in a previous attempt and was not intended to be collected during that column's attempt.

[b] Analytical quality is based upon the program 90% analytical completeness objectives.

[c] Values in paretheses indicate the total number of rejected results.

[d] Positive target analyte identification and concentration comparison chart will comprise the detected analytes from the full target analyte list.

[e] No rejected data

[f] A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate. Values associated with a "G" qualifier are quantitatiovely less certain than those not associated with a "G" qualifier. This is because "G" qualified results fall below the low point of the calibration curve.

[g] PR1HPDUP-02A2 Data results rejected due to low internal standard recovery. Sample not used during sample collection technique evaluation.

Notes:

COPCs = contaminants of potential concern
COPECs = contaminants of potential ecological concern
HSM = high-solids mass
LQ = laboratory qualifier - See Attachment 1 for definitions
R = rejected data result

µg/L = micrograms per liter
µg/Kg = micrograms per kilogram
VQ = laboratory qualifier - See Attachment 2 for definitions
VQ = validation qualifier

# Appendix O

Detailed Evaluation Sheets (Worksheet #11) – TEPH

## EVENT 1 ORIGINAL - TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS
## PR1CSOCLY**-01B

### QAPP Worksheet #11-1
### Project Quality Objectives/Systematic Planning Process Statements (Phase I)
### Phase I Data Comparison Chart

| TEPH Sample Collecton Techniques | Sample Collection Quality[a] | | | Analytical Quality[b] | Identification of Target Analytes |
|---|---|---|---|---|---|
| | Were specified sample aliquots obtained meeting all analytical needs? | | | Is the TEPH result free of any "R" flag (rejected due to association with severe data quality issues)? | Was TEPH positively identified? |
| | Attempt 1 | Attempt 2 | Attempt 3 | | |
| Whole Water | Yes | Yes | NA | Yes | Yes (1) |
| HSM dissolved plus HSM particulate[c] | No | Yes | NA | Yes | Yes (1) |

### Positive Target Analyte Identification and Concentration Comparison[d]

| Analyte Identified | PR1CSOCLYWW-01B Whole Water[e] Concentration (mg/L) | LQ | VQ | PR1CSOCLYHD-01B HSM Dissolved[e] Concentration (mg/L) | LQ | VQ | PR1CSOCLYHP-01B HSM Particulate[c,e] Concentration (mg/Kg) | LQ | VQ |
|---|---|---|---|---|---|---|---|---|---|
| TEPH | 5.0 | B | J | 5.6 | B | J | 13000 | BD | J |

There are no COPC/COPECs in the target list for TEPH.

[a] A "NA" in one of the Attempt columns indicates that the analytical group had already been collected in a previous attempt and was not intended to be collected during that column's attempt.

[b] Analytical quality is based upon the program 90% analytical completeness objectives.

[c] HSM particulate based on a composite of debris and fines.

[d] Positive target analyte identification and concentration comparison chart will comprise the detected analytes from the full target analyte list.

[e] No rejected data

Notes:

COPCs = contaminants of potential concern
COPECs = contaminants of potential ecological concern
HSM = high-solids mass
LQ = laboratory qualifier - See Attachment 1 for definitions
mg = milligrams
TEPH = total extractable petroleum hydrocarbon
VQ = laboratory qualifier - See Attachment 2 for definitions

**EVENT 1 DUPLICATE- TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS**
**PR1**DUP-01B**

**QAPP Worksheet #11-1**
**Project Quality Objectives/Systematic Planning Process Statements (Phase I)**
**Phase I Data Comparison Chart**

| TEPH Sample Collecton Techniques | Sample Collection Quality[a] | | | Analytical Quality[b] | Identification of Target Analytes |
|---|---|---|---|---|---|
| | Were specified sample aliquots obtained meeting all analytical needs? | | | Is the TEPH result free of any "R" flag (rejected due to association with severe data quality issues)? | Was TEPH positively identified? |
| | Attempt 1 | Attempt 2 | Attempt 3 | | |
| Whole Water | Yes | Yes | NA | Yes | Yes (1) |
| HSM dissolved plus HSM particulate[c] | No | Yes | NA | Yes | Yes (1) |

**Positive Target Analyte Identification and Concentration Comparison[d]**

| Analyte Identified | PR1WWDUP-01B Whole Water[e] Concentration (mg/L) | LQ | VQ | PR1HDDUP-01B HSM Dissolved[e] Concentration (mg/L) | LQ | VQ | PR1HPDUP-01B HSM Particulate[c,e] Concentration (mg/Kg) | LQ | VQ |
|---|---|---|---|---|---|---|---|---|---|
| TEPH | 7.7 | BD | J | 3.5 | B | J | 13000 | BD | J |

There are no COPC/COPECs in the target list for TEPH.

[a] A "NA" in one of the Attempt columns indicates that the analytical group had already been collected in a previous attempt and was not intended to be collected during that column's attempt.

[b] Analytical quality is based upon the program 90% analytical completeness objectives.

[c] HSM particulate based on a composite of debris and fines.

[d] Positive target analyte identification and concentration comparison chart will comprise the detected analytes from the full target analyte list.

[e] No rejected data

Notes:
COPCs = contaminants of potential concern
COPECs = contaminants of potential ecological concern
HSM = high-solids mass
LQ = laboratory qualifier - See Attachment 1 for definitions
mg = milligrams
TEPH = total extractable petroleum hydrocarbon
VQ = laboratory qualifier - See Attachment 2 for definitions

## EVENT 2 ORIGINAL - TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS
## PR1CSOCLY**-02B

### QAPP Worksheet #11-1
### Project Quality Objectives/Systematic Planning Process Statements (Phase I)
### Phase I Data Comparison Chart

| TEPH Sample Collecton Techniques | Sample Collection Quality[a] | | | Analytical Quality[b] | Identification of Target Analytes |
|---|---|---|---|---|---|
| | Were specified sample aliquots obtained meeting all analytical needs? | | | Is the TEPH result free of any "R" flag (rejected due to association with severe data quality issues)? | Was TEPH positively identified? |
| | Attempt 1 | Attempt 2 | Attempt 3 | | |
| Whole Water | No | Yes | NA | Yes | Yes (1) |
| HSM dissolved plus HSM particulate | No | Yes | NA | Yes | Yes (1) |

### Positive Target Analyte Identification and Concentration Comparison[c]

| Analyte Identified | PR1CSOCLYWW-02B Whole Water[d] Concentration (mg/L) | LQ | VQ | PR1CSOCLYHD-02B HSM Dissolved[d] Concentration (mg/L) | LQ | VQ | PR1CSOCLYHP-02B HSM Particulate[d] Concentration (mg/Kg) | LQ | VQ |
|---|---|---|---|---|---|---|---|---|---|
| TEPH | 2.22 | D | J | ND | | U,J | 13000 | D | J |

There are no COPC/COPECs in the target list for TEPH.

[a] A "NA" in one of the Attempt columns indicates that the analytical group had already been collected in a previous attempt and was not intended to be collected during that column's attempt.

[b] Analytical quality is based upon the program 90% analytical completeness objectives.

[c] Positive target analyte identification and concentration comparison chart will comprise the detected analytes from the full target analyte list.

[d] No rejected data

Notes:

COPCs = contaminants of potential concern
COPECs = contaminants of potential ecological concern
HSM = high-solids mass
LQ = laboratory qualifier - See Attachment 1 for definitions
mg = milligrams
TEPH = total extractable petroleum hydrocarbon
VQ = laboratory qualifier - See Attachment 2 for definitions

## EVENT 2 DUPLICATE - TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS
## PR**DUP-02B

### QAPP Worksheet #11-1
### Project Quality Objectives/Systematic Planning Process Statements (Phase I)
### Phase I Data Comparison Chart

| TEPH Sample Collecton Techniques | Sample Collection Quality[a] | | | Analytical Quality[b] | Identification of Target Analytes |
|---|---|---|---|---|---|
| | Were specified sample aliquots obtained meeting all analytical needs? | | | Is the TEPH result free of any "R" flag (rejected due to association with severe data quality issues)? | Was TEPH positively identified? |
| | Attempt 1 | Attempt 2 | Attempt 3 | | |
| Whole Water | No | Yes | NA | Yes | Yes (1) |
| HSM dissolved plus HSM particulate | No | Yes | NA | Yes | Yes (1) |

**Positive Target Analyte Identification and Concentration Comparison[c]**

| Analyte Identified | PRWWDUP-02B Whole Water[d] Concentration (mg/L) | LQ | VQ | PR1HDDUP-02B HSM Dissolved[d] Concentration (mg/L) | LQ | VQ | PR1HPDUP-02B HSM Particulate[d] Concentration (mg/Kg) | LQ | VQ |
|---|---|---|---|---|---|---|---|---|---|
| TEPH | 4.200 | | J | ND | | U,J | 7700 | D | J |

There are no COPC/COPECs in the target list for TEPH.

[a] A "NA" in one of the Attempt columns indicates that the analytical group had already been collected in a previous attempt and was not intended to be collected during that column's attempt.

[b] Analytical quality is based upon the program 90% analytical completeness objectives.

[c] Positive target analyte identification and concentration comparison chart will comprise the detected analytes from the full target analyte list.

[d] No rejected data

Notes:
COPCs = contaminants of potential concern
COPECs = contaminants of potential ecological concern
HSM = high-solids mass
LQ = laboratory qualifier - See Attachment 1 for definitions
mg = milligrams
TEPH = total extractable petroleum hydrocarbon
VQ = laboratory qualifier - See Attachment 2 for definitions

## Appendix P

CSO/SWO Phase I Data Quality Usability Assessment Report

# Combined Sewer Overflow/Stormwater Outfall Investigation

Lower Passaic River Study Area

Phase I Data Quality Usability Assessment Report

Prepared For

**Tierra Solutions, Inc.**
East Brunswick, NJ

Prepared By

**Environmental Data Services, Ltd.**

June 2016

Revision 2

# TABLE OF CONTENTS

## 1. Background

In 2013 the United States Environmental Protection Agency (USEPA) approved a Quality Assurance Project Plan (QAPP) prepared by Tierra Solutions, Inc. (Tierra) for the investigation and characterization of combined sewer overflows (CSOs) and storm water outfalls (SWOs). The CSO/SWO Investigation QAPP, Revision 3 (Tierra, 2013) (hereafter referred to as the QAPP) outlined a two phased program – Phase I being a limited sampling effort with the objective of evaluating alternative sampling approaches and Phase II being a more fulsome sampling effort incorporating more overflows and outfalls.

The Phase I activities, conducted between June 10th, 2013 and May 5th, 2014, consisted of the collection and analysis of two CSO effluent samples using three approaches to sample collection: low solids mass (LSM), high solids mass (HSM) and whole water. Data collected will be evaluated to inform the selection of the most appropriate sampling approach to quantify contaminants in the solid (particulate), dissolved, and whole water-phases during Phase II. The Phase I CSO effluent samples were collected at the Clay Street CSO location (described in Table 3-1 of the QAPP) and distributed to multiple laboratories for analyses. Validation of the sample analytical results was completed on July 14th, 2014. According to Worksheet #33 of the QAPP, (Tierra, 2013) a Data Quality Usability Assessment Report (DQUAR) must be completed within 40 days of the conclusion of validation tasks.

## 2. Introduction

In accordance with requirements of the QAPP, the data quality usability assessment was conducted on both verified and validated data; this DQUAR provides a summary of the documentation and evaluation of data quality and usability for sample data collected during the implementation of Phase I of the CSO/SWO Investigation. The data verification and data validation processes are described respectively in Worksheets #34 and #35 of the QAPP. The information presented in this document will be used as part of the final Phase I evaluation that will determine the sampling method for each analytical group that will provide the greatest percentage of useable data to meet program data use and data quality objectives.

Worksheet #37 of the QAPP provides description of the components of the DQUAR. These components are described in detail in subsequent sections of this report.

## 3. Data Quality Parameters Overview

To assess whether the analytical data obtained were consistent with the objectives of the QAPP, seven data quality parameters were evaluated. In the event that the data verification/validation process identified an instance where any of the data quality parameters did not meet the objectives established in the QAPP, the affected sample results were evaluated in accordance with the data verification/validation protocols specified in Worksheet #35 of the QAPP and documented accordingly. A detailed narrative describing the verification/validation assessments and findings can be found within the data verification/validation data assessment narratives prepared for each data package.

The seven data quality parameters assessed included the following:

- precision;
- accuracy/bias contamination;
- overall accuracy/bias;
- sensitivity;
- representativeness;
- comparability; and
- completeness.

Each of these data quality parameters, as it relates to Phase I of the QAPP program, is discussed below.

### 3.1 Precision

Precision is the measure of variability between individual sample measurements of the same property under similar conditions. During the CSO/SWO Investigation program, precision was evaluated through the analysis of two types of duplicate samples. Field and laboratory duplicates were analyzed at regular, specified intervals throughout the CSO/SWO Investigation program.

Field duplicates consisted of samples that were collected in the field at the frequency specified in the QAPP in order to determine the precision of field sampling methods. These samples were homogenized (except for those to be analyzed for volatile organic compounds [VOCs]), split into two distinct samples, and submitted "blind" to the analytical laboratories for analysis (i.e., the sample identification did not reveal the sample with which its field duplicate was associated).

Relative percent differences (RPDs) between the field sample results and the field duplicate results provide an estimate of the overall sampling and analytical precision.

Laboratory duplicates are two portions of a single homogeneous sample that are analyzed for the same parameter in order to determine the precision of the analytical system. Two types of laboratory duplicates were prepared. Laboratory duplicates without known analyte spikes added were analyzed to monitor laboratory precision for cyanide, total organic carbon (TOC), total suspended solids (TSS), and total dissolved solids (TDS) analyses, while matrix spike (MS) and matrix spike duplicate (MSD) evaluations were performed to monitor laboratory precision for the remaining analysis types. Laboratory duplicates were analyzed at the frequency specified in QAPP. The RPD between results obtained for a given laboratory duplicate pair provides an estimate of analytical precision.

The precision assessment for field and laboratory duplicate analyses is expressed as the RPD:

$$RPD = \frac{|S - D|}{\frac{(S + D)}{2}} \times 100$$

where: S = original sample concentration
D = duplicate sample concentration

Acceptance criteria for field and laboratory duplicates are provided in Worksheet #12 of the QAPP. Conformance to laboratory duplicate frequency requirements, as well as acceptability of the resulting RPD values, were evaluated and considered during data validation.

Although laboratory duplicate analyses are used as indicators of relative precision of the analytical systems, the degree of homogeneity of the contaminants in the sample medium can also affect the reproducibility of a particular measurement. For example, pieces of decayed wood debris, chunks of asphalt, glass, free product, etc., can increase sample heterogeneity and therefore can reduce the laboratory technician's ability to create homogeneous duplicate samples with which to measure precision. Since the sample matrix characteristics can affect the way precision is measured, the sample matrix should be considered by the validator.

With respect to the results of the Phase I CSO/SWO Investigation data, there are no limitations on data usage based on precision quality acceptance criteria. The following table summarizes the Phase I precision quality evaluation by analytical group and sampling technique. The "x" designation indicates that an issue was identified however, such issue does not infer that the data is unusable. A more detailed discussion of this data quality parameter evaluation is provided in Section 4.1 of this report.

| **Precision** | | | | |
|---|---|---|---|---|
| **Analytical Groups** | **Whole Water** | **LSM** | **HSM** | **Grab Water** |
| Semivolatile Organics | x | x | x | - |
| Volatile Organics (trace) | | - | x | - |
| Aroclor PCBs | | | | - |
| Organochlorine Pesticides | | x | x | - |
| Semivolatile Organics (SIM) | | x | x | - |
| Metals | | - | - | x |
| Mercury | x | - | - | |
| Methylmercury | | - | - | |
| Cyanide | | - | x | - |
| PCDD/PCDFs | x | x | x | - |
| PCB Congeners | x | x | x | - |
| Chlorinated Herbicides | x | x | x | - |
| TOC/POC/DOC | | | | - |
| TEPH | x | - | x | - |
| TSS | x | | x | |
| TDS | | | | |
| Grain Size | | - | - | - |

- = analysis was not performed for this analytical group
x = data qualified during validation for this analytical group

### 3.2 Accuracy/Bias Contamination

Accuracy parameters were also assessed with respect to contamination through the use of field and laboratory blanks. Any contamination present in field or laboratory blanks reflects the potential for contamination in associated samples. Measurement performance criteria for accuracy/bias contamination are outlined in Worksheet #12 of the QAPP. Acceptability of quality control (QC) results for accuracy/bias contamination and conformance to field and laboratory QC sample frequency requirements were evaluated and considered during the data verification/validation.

With respect to the results of the Phase I CSO/SWO Investigation data, there are no limitations on the data usage based on accuracy/bias contamination acceptance criteria. The following table summarizes the Phase I accuracy/bias contamination quality evaluation by analytical group and sampling technique. The "x" designation indicates that an issue was identified however, such issue does not infer that the data is unusable. A more detailed discussion of this data quality parameter evaluation is provided in Section 4.1 of this report.

| Accuracy/Bias Contamination | | | | |
|---|---|---|---|---|
| **Analytical Groups** | **Whole Water** | **LSM** | **HSM** | **Grab Water** |
| Semivolatile Organics | x | x | x | - |
| Volatile Organics (trace) | | - | x | - |
| Aroclor PCBs | | | | - |
| Organochlorine Pesticides | x | x | x | - |
| Semivolatile Organics (SIM) | x | x | x | - |
| Metals | x | - | - | x |
| Mercury | | - | - | |
| Methylmercury | | - | - | |
| Cyanide | x | - | x | - |
| PCDD/PCDFs | x | x | x | - |
| PCB Congeners | x | x | x | - |
| Chlorinated Herbicides | x | x | x | - |
| TOC/POC/DOC | x | x | x | - |
| TEPH | | - | x | - |
| TSS | | | x | |
| TDS | x | | x | |
| Grain Size | | - | - | - |

- = analysis was not performed for this analytical group
x = data qualified during validation for this analytical group

### 3.3 Overall Accuracy/Bias

Accuracy is a measure of the bias and precision in a system, and is defined as the agreement between a measurement and an accepted reference or true value. Pre-mobilization performance evaluation samples were analyzed prior to initiating field work. Documentation of successful analysis of the performance evaluation samples was provided to the United States Environmental Protection Agency (USEPA) by Tierra Solutions, Inc, in letters dated May 25 and October 31, 2012. Accuracy was monitored during the CSO/SWO Investigation program through the analysis of MSs, surrogate spikes, and laboratory control samples (LCSs) (performed at regular, specified intervals).

As outlined in the QAPP, the analysis of MS samples and LCSs provide laboratory results that may be compared to their associated known values to monitor potential bias. The MS and surrogate spike evaluations were used to assess bias by monitoring the actual recovery of a known quantity of a chemical, added to the native sample, versus the expected recovery. The LCS evaluations were used to assess bias by monitoring the actual recovery of a known quantity of a chemical, added to a blank, versus the expected recovery.

Acceptance criteria for each of the Accuracy evaluations described above are provided in Worksheet #12 of the QAPP. Conformance to laboratory QC sample frequency requirements, as well as acceptability of QC results for accuracy, were evaluated and considered during data verification/validation.

Data for several analytical groups associated with multiple sampling techniques was determined to be unusable due to severe accuracy/bias issues. The following table summarizes the Phase I overall accuracy/bias quality evaluation by analytical group and sampling technique. The “x” designation indicates that an issue was identified however, such issue does not infer that the data is unusable. A more detailed discussion of this data quality parameter evaluation is provided in Section 4.1 of this report.

| Overall Accuracy/Bias Issues | | | | |
|---|---|---|---|---|
| **Analytical Groups** | **Whole Water** | **LSM** | **HSM** | **Grab Water** |
| Semivolatile Organics | x | x | x | - |
| Volatile Organics (trace) | | - | x | - |
| Aroclor PCBs | x | | x | - |
| Organochlorine Pesticides | x | x | x | - |
| Semivolatile Organics (SIM) | x | x | x | - |
| Metals | | - | - | |
| Mercury | | - | - | |
| Methylmercury | | - | - | |
| Cyanide | | - | x | - |
| PCDD/PCDFs | x | x | x | - |
| PCB Congeners | x | x | x | - |
| Chlorinated Herbicides | x | x | x | - |
| TOC/POC/DOC | | | x | - |
| TEPH | x | - | x | - |
| TSS | | | | |
| TDS | | | | |
| Grain Size | | - | - | - |

\- = analysis was not performed for this analytical group
x = data qualified during validation for this analytical group

### 3.4 Sensitivity

Sensitivity is related to the ability to compare analytical results with project quantitation limits (PQLs). Analytical detection limits should be at or below the PQLs to allow effective comparisons. All sample analytical results reported during Phase I of the CSO/SWO Investigation were evaluated to determine if adequate sensitivity was achieved. The results for each analyte were cross-checked against the PQLs presented in Worksheet #15 of the QAPP. The tables in Section 3.4.1 below summarize the percent of sample results that did not meet the data quality objectives as defined by the QAPP. The percentages expressed in these tables indicate the fraction of the total number of results reported for each analytical group and sampling technique where reporting limits exceeded the PQLs.

With respect to the results of the Phase I CSO/SWO Investigation data, there are no limitations on the data usage based on sensitivity acceptance criteria. A more detailed discussion of this data quality parameter evaluation is provided in Section 3.4.1.

### 3.4.1 Achieved Analytical Sensitivity

The fact that data obtained for a particular sample type/colletion technique failed to meet established PQLs for specific analytical groups as indicated in the tables below, may have impacted the number of positive results identified in those samples, thereby potentially impacting the data evaluation process. Following each table is a discussion of the analytical groups for which failure to meet the PQLs, may have impacted the Phase I data evaluation process.

**Whole Water**

**Table 3-1**
**Phase1 Sensitivity Quality Evaluation for Whole Water Samples**

| Analytical Group | Total Number of Results Reported | Non-detected Results with PQLs Greater than those Defined in the CSO/SWO QAPP | Detected Results Between the MDL (or EDL where appropriate) and Elevated PQL | Percent of Results that did not meet Data Quality Objectives as Defined by CSO/SWO QAPP PQLs |
|---|---|---|---|---|
| Polychlorinated dibenzo-*p*-dioxins and dibenzofurans (PCDD/PCDFs) | 102 | 7 | 42 | 48 |
| Polychlorinated biphenyl (PCB) Congeners | 1,008 | 423 | 77 | 50 |
| Organochlorine Pesticides | 112 | 4 | 8 | 11 |
| Semivolatile Organics (SVOC) Selective Ion Monitoring (SIM) | 120 | 4 | 4 | 6.7 |
| Semivolatile Organics | 200 | 180 | 7 | 94 |
| Metals | 92 | 0 | 7 | 7.6 |
| Mercury | 4 | 0 | 0 | 0 |
| Methyl Mercury | 4 | 0 | 0 | 0 |
| VOCs | 24 | 0 | 4 | 17 |
| Aroclor PCBs | 36 | 0 | 0 | 0 |
| Chlorinated Herbicides | 24 | 0 | 2 | 8.3 |
| Cyanide | 4 | 0 | 0 | 0 |
| TOC | 4 | 0 | 0 | 0 |
| Total Extractable Petroleum Hydrocarbons (TEPH) | 4 | 0 | 0 | 0 |
| TSS | 4 | 0 | 0 | 0 |
| TDS | 4 | 0 | 0 | 0 |

Each analyte group was further evaluated to determine when and if the failure to meet the PQLs may have impacted the number of positive results used to determine the recommended sample collection method during the Phase I evaluation process. For all analytical groups, the detected results between the method detection limit/estimated detection limit (MDL/EDL) and the elevated PQL were included as positive results when determining the recommended sample collection method. Therefore, although the established PQLs were not met in those cases, there is no impact to the outcome of the data evaluation process.

For the whole water (WW) PCDD/PCDF results, PQLs identified in Table 3-1 above as greater than those defined in the QAPP, all seven non-detected results were obtained from Event #1, Attempt #1, which was not included in the sample evaluation process. Therefore there was no impact on the recommended sample collection method determination.

For the WW PCB Congener results, PQLs identified in Table 3-1 above as greater than those defined in the QAPP were only marginally exceeded due to either sample dilution prior to analyses or slightly less than targeted sample volume used for analysis. A total of 258 non-detected results were reported above the PQL for Event #2, Attempt #2 and Event #1, Attempt #3, 20 of which were contaminants of potential concern/contaminants of potential ecological concern (COPCs/COPECs). Detection of COPCs/COPECs is prioritized when determining the recommended sample collection method, therefore these non-detected results may have impacted the number of positive COPCs/COPECs results identified, and could have affected the selection of a sample collection method. The remaining non-detected results reported above the PQL were obtained from Event #1, Attempt #1 and were not included in the evaluation process.

For the WW Organochlorine Pesticide results, PQLs identified in Table 3-1 above as greater than those defined in the QAPP were only marginally exceeded due to either sample dilution prior to analyses or slightly less than targeted sample volume used for analysis. A total of four non-detected results were reported above the PQL, all from Event #1, Attempt #2. None of these non-detected results were COPCs/COPECs, further, had the four results been positive it would not have made a significant difference in the total number of positive analytes detected. Therefore, the non-detected results did not influence the selection of a sample collection method.

For the WW SVOC SIM results, PQLs identified in Table 3-1 above as greater than those defined in the QAPP were marginally exceeded due to sample dilution prior to analysis. A total of four non-detected results were reported above the PQL for Event #1, Attempt #2 and Event #2, Attempt #2. Had the four results been positive it would not have made a significant difference in the total number of positive results reported (COPCs/COPECs or otherwise) and therefore the selection of a sample collection method was not impacted.

For the WW SVOC results, PQLs identified in Table 3-1 above as greater than those defined in the QAPP were exceeded to varying degrees, due to either sample dilution prior to analysis, or use of less than targeted sample volume for analysis. A total of 90 non-detected results were reported above the PQL due to sample dilution for Event #1, Attempt #2. Samples collected during this event were analyzed at a dilution which resulted in a significant increase in the PQL obtained for these samples, this may have impacted the number of positive results detected, and therefore may have affected the selection of a sample collection method. The 90 non-detected SVOC results that were only marginally above the PQL due to sample volume used during the analyses for Event #2, Attempt #2, did not likely impact the number of positive results reported for that event, and therefore did not affect the selection of a sample collection method.

**Low Solids Mass Dissolved**

**Table 3-2**
**Phase 1 Sensitivity Quality Evaluation for Low Solids Mass Dissolved Samples**

| Analytical Group | Total Number of Results Reported | Non-detected Results with PQLs Greater than those Defined in the CSO/SWO QAPP | Detected Results Between the MDL (or EDL where appropriate) and Elevated PQL | Percent of Results that did not meet Data Quality Objectives as Defined by CSO/SWO QAPP PQLs |
|---|---|---|---|---|
| PCDD/PCDFs | 102 | 0 | 22 | 22 |
| PCB Congeners | 1,008 | 453 | 154 | 60 |
| Organochlorine Pesticides | 112 | 9 | 13 | 20 |
| Semivolatile Organics SIM | 120 | 19 | 18 | 31 |
| Semivolatile Organics | 200 | 7 | 8 | 7.5 |
| Aroclor PCB | 36 | 0 | 0 | 0 |
| Chlorinated Herbicide | 24 | 0 | 1 | 4.2 |
| TOC/DOC/POC | 4 | 0 | 0 | 0 |
| TSS | 6 | 1 | 0 | 17 |
| TDS | 6 | 0 | 0 | 0 |

Each analyte group was further evaluated to determine when and if the failure to meet the PQLs may have impacted the number of positive results used to determine the recommended sample collection method during the Phase I evaluation process. For all analytical groups the detected results between the MDL/EDL and the elevated PQL were included as positive results when determining the recommended sample collection method. Therefore, although the established PQLs were not met in those cases, there is no impact to the outcome of the data evaluation process.

For the low solids mass (LSM) dissolved PCB Congener results, PQLs identified in Table 3-2 above as greater than those defined in the QAPP were only marginally exceeded due to either sample dilution prior to analyses or slightly less than targeted sample volume used for analysis. A total of 269 non-detected results were reported above the PQL for Event #2, Attempt #2 and Event #1, Attempt #3, 24 of which were COPCs/COPECs. Detection of COPCs/COPECs is prioritized when determining the recommended sample collection method. Therefore, these non-detected results may have impacted the number of positive COPC/COPECs results identified and could have affected the selection of a sample collection method. The remaining non-detected results reported above the PQL were obtained from Event #1, Attempt #1 and were not used in the sample collection evaluation process.

For the LSM dissolved Organochlorine Pesticide results, PQLs identified in Table 3-2 above as greater than those defined in the QAPP were only marginally exceeded due to either sample dilution prior to analysis or slightly less than targeted sample volume used for analysis. A total of nine non-detected results were reported above the PQL for Event #1, Attempt #2 and Event #2, Attempt #2, none of these non-detected results were COPCs/COPECs. Further, had those nine results been positive, it would not have made a significant difference in the total number of positive results identified. Therefore, the non-detected results did not influence the selection of a sample collection method.

For the LSM dissolved SVOC SIM results, PQLs identified in Table 3-2 above as greater than those defined in the QAPP were only marginally exceeded due to either sample dilution prior to analysis or less than targeted sample volume used for analysis. A total of 18 non-detected results were reported above the PQL for Event #1, Attempt #2, 10 of which were COPCs/COPECs. Detection of COPCs/COPECs is prioritized when determining the recommended sample collection method, therefore these non-detected results may have impacted the number of positive COPCs/COPECs results identified and could have affected the selection of a sample collection method. The non-detected result reported above the PQL for Event #2, Attempt #2 was not a COPC/COPEC, further had it been positive, it would not have made a significant difference in the total number of positive results reported.
Therefore the selection of a sample collection method was not influenced in this case.

For the LSM dissolved SVOC results, PQLs identified in Table 3-2 above as greater than those defined in the QAPP were only marginally exceeded due to a less than targeted sample volume used for analysis. The seven non-detected SVOC results that were only slightly above the PQL for Event #2, Attempt #2, did not likely impact the number of positive results reported for that event, and therefore did not affect the selection of a sample collection method.

For the LSM dissolved TSS results, the PQL identified in Table 3-2 above as greater than that defined in the QAPP, has no impact on the recommended sample collection method determination, since TSS measurements are not used in the sample collection evaluation process.

**<u>Low Solids Mass Particulate</u>**

**Table 3-3**
**Phase 1 Sensitivity Quality Evaluation for Low Solids Mass Particulate Samples**

| Analytical Group | Total Number of Results Reported | Non-detected Results with PQLs Greater than those Defined in the CSO/SWO QAPP | Detected Results Between the MDL (or EDL where appropriate) and Elevated PQL | Percent of Results that did not meet Data Quality Objectives as Defined by CSO/SWO QAPP PQLs |
|---|---|---|---|---|
| PCDD/PCDFs | 102 | 0 | 56 | 55 |
| PCB Congeners | 1,008 | 337 | 155 | 49 |
| Organochlorine Pesticides | 112 | 34 | 13 | 42 |
| Semivolatile Organic SIM | 120 | 23 | 8 | 26 |
| Semivolatile Organics | 200 | 97 | 3 | 50 |
| Aroclor PCBs | 36 | 18 | 0 | 50 |
| Chlorinated Herbicides | 24 | 16 | 0 | 67 |
| TOC/DOC/POC | 4 | 0 | 0 | 0 |

Each analyte group was further evaluated to determine when and if the failure to meet the PQLs may have impacted the number of positive results used to determine the recommended sample collection method during the Phase I evaluation process. For all analytical groups the detected results between the MDL/EDL and the elevated PQL were included as positive results when determining the recommended sample collection method. Therefore, although the established PQLs were not met in those cases, there is no impact to the outcome of the data evaluation process.

For the LSM particulate PCB Congener results, PQLs identified in Table 3-3 above as greater than those defined in the QAPP were exceeded due to both sample dilution prior to analysis and significantly less than targeted sample mass available for analysis. A total of 261 non-detected results were reported above the PQL for Event #2, Attempt #2 and Event #1, Attempt #3, with 14 of the 261 non-detected results consisting of COPCs/COPECs. Detection of COPCs/COPECs is prioritized when determining the recommended sample collection method, therefore these non-detected results may have impacted the number of positive COPCs/COPECs results identified, and could have affected the selection of a sample collection method. The remaining samples exhibiting non-detected results reported above the PQL were obtained from Event #1, Attempt #1 and were not included in the sample collection method evaluation process.

For the LSM particulate Organochlorine Pesticide results, PQLs identified in Table 3-3 above as greater than those defined in the QAPP were exceeded due to sample dilution prior to analysis and/or significantly less than targeted sample mass available for analysis. A total of 34 non-detected results were reported above the PQL for Event #1, Attempt #2 and Event #2, Attempt #2. If the 34 results had been positive it may have made a significant difference in the total number of positive results identified and therefore could have had an impact on the selection of a sample collection method.

For the LSM particulate SVOC SIM results, PQLs identified in Table 3-3 above as greater than those defined in the QAPP were exceeded due to sample dilution prior to analysis and/or significantly less than targeted sample mass available for analysis. A total of 18 non-detected results were reported above the PQL for Event #1, Attempt #2, in which nine were COPCs/COPECs. Detection of COPCs/COPECs is prioritized when determining the recommended sample collection method, therefore these non-detected results may have impacted the number of positive COPCs/COPECs results identified, and could have affected the selection of a sample collection method. The five non-detected results reported above the PQL for Event #2, Attempt #2 were not COPC/COPECs, Further, had they been positive it would not have made a significant difference in the total number of positive results reported. Therefore, the selection of a sample collection method was not influenced in this case.

For the LSM particulate SVOC results, PQLs identified in Table 3-3 above as greater than those defined in the QAPP were exceeded due to significantly less than targeted sample mass available for analysis. A total of 97 non-detected results were reported above the PQL all from Event #2, Attempt #2. Had the 97 results been positive it may have made a significant difference in the total number of positive results identified and therefore could have had an impact on the selection of a sample collection method.

For the LSM particulate Aroclor PCB results, PQLs identified in Table 3-3 above as greater than those defined in the QAPP were exceeded due to significantly less than targeted sample mass available for analysis. A total of 18 non-detected results were reported above the PQL all from Event #2, Attempt #2, 16 of which were COPCs/COPECs. Detection of COPCs/COPECs is prioritized when determining the recommended sample collection method, therefore these non-detected results may have impacted the number of positive COPCs/COPECs results identified, and could have affected the selection of a sample collection method.

For the LSM particulate Herbicide results, PQLs identified in Table 3-3 above as greater than those defined in the QAPP were exceeded due to significantly less than targeted sample mass available for analysis. A total of 16 non-detected results were reported above the PQL for Event #2, Attempt #2 and Event #1, Attempt #3. Had the 16 results been positive it may have made a significant difference in the total number of positive results identified and therefore could have had an impact on the selection of a sample collection method.

**High Solids Mass Dissolved**

**Table 3-4**
**Phase 1 Sensitivity Quality Evaluation for High Solids Mass Dissolved Samples**

| Analytical Group | Total Number of Results Reported | Non-detected Results with PQLs Greater than those Defined in the CSO/SWO QAPP | Detected Results Between the MDL (or EDL where appropriate) and Elevated PQL | Percent of Results that did not meet Data Quality Objectives as Defined by CSO/SWO QAPP PQLs |
|---|---|---|---|---|
| PCDD/PCDFs | 102 | 0 | 48 | 47 |
| PCB Congeners | 1,008 | 446 | 128 | 57 |
| Organochlorine Pesticides | 112 | 4 | 18 | 20 |
| Semivolatile Organics SIM | 120 | 0 | 6 | 5.0 |
| Semivolatile Organics | 200 | 140 | 7 | 74 |
| VOCs | 24 | 0 | 4 | 17 |
| Aroclor PCBs | 36 | 0 | 0 | 0 |
| Chlorinated Herbicides | 24 | 3 | 3 | 25 |
| Cyanide | 4 | 0 | 0 | 0 |
| TOC | 4 | 0 | 0 | 0 |
| TEPH | 4 | 0 | 0 | 0 |
| TSS | 8 | 0 | 0 | 0 |
| TDS | 8 | 0 | 0 | 0 |

Each analyte group was further evaluated to determine when and if the failure to meet the PQLs may have impacted the number of positive results used to determine the recommended sample collection method during the Phase I evaluation process. For all analytical groups the detected results between the MDL/EDL and the elevated PQL were included as positive results when determining the recommended sample collection method. Therefore, although the established PQLs were not met in those cases, there is no impact to the outcome of the data evaluation process.

For the high solids mass (HSM) dissolved PCB Congener results, PQLs identified in Table 3-4 above as greater than those defined in the QAPP were exceeded due to sample dilution prior to analysis and/or use of slightly less than targeted sample volume for analysis. A total of 293 non-detected results were reported above the PQL for Event #2, Attempt #2 and Event #1, Attempt #3 , 23 of which were COPCs/COPECs. Detection of COPCs/COPECs is prioritized when determining the recommended sample collection method, therefore these non-detected results may have impacted the number of positive COPCs/COPECs results identified, and could have affected the selection of a sample collection method. The remaining non-detected results reported above the PQL were obtained from Event #1, Attempt #1 and were not included in the evaluation process.

For the HSM dissolved Organochlorine Pesticide results, PQLs identified in Table 3-4 above as greater than those defined in the QAPP were exceeded due to sample dilution prior to analysis and/or use of slightly less than targeted sample volume for analysis. A total of four non-detected results were reported above the PQL for Event #1, Attempt #2 and Event #2, Attempt #2, none of which were COPCs/COPECs. Further, had the four results been positive it would not have made a significant difference in the total number of positive analytes detected. Therefore, the non-detected results did not influence the selection of a sample collection method.

For the HSM dissolved SVOC results, PQLs identified in Table 3-4 above as greater than those defined in the QAPP were exceeded due to sample dilution prior to analysis and/or use of slightly less than targeted sample volume for analysis. The 51 non-detected results reported above the PQL for Event #1, Attempt #2 did not affect the selection of the sample collection method, as both the primary and duplicate samples were eliminated from consideration because more than ten percent of the results reported were rejected during data validation. A total of 89 non-detected results were reported above the PQL for Event #2, Attempt #2.

For the HSM dissolved Herbicide results, PQLs identified in Table 3-4 above as greater than those defined in the QAPP were exceeded due to use of less than targeted sample volume for analysis. A total of three non-detected results were reported above the PQL all from Event #1, Attempt #2. Had the three results been positive it may have made a significant difference in the total number of positive results identified and therefore could have had an impact on the selection of a sample collection method.

**<u>High Solids Mass Particulate</u>**

**Table 3-5**
**Phase 1 Sensitivity Quality Evaluation for High Solids Mass Particulate Samples**

| Analytical Group | Total Number of Results Reported | Non-detected Results with PQLs Greater than those Defined in the CSO/SWO QAPP | Detected Results Between the MDL (or EDL where appropriate) and Elevated PQL | Percent of Results That Did Not Meet Data Quality Objectives as Defined by CSO/SWO QAPP PQLs |
|---|---|---|---|---|
| PCDD/PCDFs | 102 | 5 | 12 | 17 |
| PCB Congeners | 1,008 | 308 | 79 | 38 |
| Organochlorine Pesticides | 112 | 38 | 10 | 43 |
| SVOC SIM | 120 | 13 | 1 | 12 |
| SVOC | 200 | 178 | 10 | 94 |
| VOCs | 42 | 28 | 11 | 93 |
| Aroclor PCBs | 36 | 26 | 5 | 86 |
| Chlorinated Herbicides | 24 | 0 | 16 | 67 |
| Cyanide | 6 | 0 | 0 | 0 |
| TOC | 6 | 0 | 0 | 0 |
| TEPH | 4 | 0 | 0 | 0 |

EDL = estimated detection limit
MDL = method detection limit

Each analyte group was further evaluated to determine when and if the failure to meet the PQLs may have impacted the number of positive results used to determine the recommended sample collection method during the Phase I evaluation process. For all analytical groups the detected results between the MDL/EDL and the elevated PQL were included as positive results when determining the recommended sample collection method. Therefore, although the established PQLs were not met in those cases, there is no impact to the outcome of the data evaluation process.

For the HSM particulate PCDD/PCDFs results, PQLs identified in Table 3-5 above as greater than those defined in the QAPP were exceeded due to sample dilution prior to analysis, and/or less than targeted sample mass used for analysis. A total of three non-detected results were reported above the PQL for Event #2, Attempt #2. Since a significantly greater number of positive COPCs/COPECs were already identified in the HSM sample than others, had the three results been positive it would not have made a significant difference in the selection of a sample collection method. One non-detected result for Event #1, Attempt #3 was a COPC/COPEC. Detection of COPCs/COPECs is prioritized when determining the recommended sample collection method, therefore this non-detected result may have impacted the number of positive COPCs/COPECs results identified, and could have affected the selection of a sample collection method.

For the HSM particulate PCB Congener results, PQLs identified in Table 3-5 above as greater than those defined in the QAPP were exceeded due to sample dilution prior to analysis, and/or less than targeted sample mass used for analysis. A total of 212 non-detected results were reported above the PQL for Event #2, Attempt #2 and Event #1, Attempt #3, nine of which were COPCs/COPECs. Since a significantly greater number of positive COPCs/COPECs were already identified in the HSM sample than others, had the nine results been positive it would not have made a significant difference in the selection of a sample collection method. The remaining non-detected results reported above the PQL were obtained from Event #1, Attempt #1 and were not included in the sample collection method evaluation process.

For the HSM particulate Organochlorine Pesticide results, PQLs identified in Table 3-5 above as greater than those defined in the QAPP were exceeded due to sample dilution prior to analysis, and/or less than targeted sample mass used for analysis. A total of 38 non-detected results were reported above the PQL for Event #1, Attempt #2 and Event #2, Attempt #2, none of which were COPCs/COPECs. Since a significantly greater number of positive COPCs/COPECs were already identified in the HSM sample than others, had the 38 results been positive it would not have made a significant difference in the selection of a sample collection method.

For the HSM particulate SVOC SIM results, PQLs identified in Table 3-5 above as greater than those defined in the QAPP were marginally exceeded due to sample dilution prior to analysis, less than targeted sample mass used for analysis and/or the percent solids of the samples. A total of 13 non-detected results were reported above the PQL for Event #1, Attempt #2 and Event #2, Attempt #2, five of which were COPCs/COPECs. Detection of COPCs/COPECs is prioritized when determining the recommended sample collection method, therefore these non-detected results may have impacted the number of positive COPCs/COPECs results identified, and could have affected the selection of a sample collection method.

For the HSM particulate SVOC results, PQLs identified in Table 3-5 above as greater than those defined in the QAPP were exceeded due to sample dilution prior to analysis, less than targeted sample mass used for analysis and/or the percent solids of the samples. A total of 86 non-detected results were reported above the PQL for Event #2, Attempt #2. Had the 86 results been positive it may have made a significant difference in the total number of positive results identified and therefore could have had an impact on the selection of a sample collection method. Quality control issues identified in the primary and duplicate analyses of Event #1, Attempt #2, HSM dissolved analyses eliminated the HSM sample collection method from consideration, resulting in an inconclusive overall determination for that Event/Attempt. Therefore the 92 PQLs exceeded with non-detected results in the HSM particulate component of Event #1, Attempt #2, would have had no impact on selection of a sample collection method.

For the HSM particulate VOC results, PQLs identified in Table 3-5 above as greater than those defined in the QAPP were marginally exceeded due to less than targeted sample mass available for analysis and/or the percent solids of the samples. The non-detected results reported above the PQL for Event #1, Attempt #2 and Event #2, Attempt #1, did not affect the selection of a sample collection method as the high solids mass samples had a significant amount of rejected data (see Section 4.1.6 for a description of rejected data), and were eliminated from consideration on that basis.

For the HSM particulate Aroclor PCB results, PQLs identified in Table 3-5 above as greater than those defined in the QAPP were exceeded due to the percent solids of the samples. A total of seven non-detected results were reported above the PQL for Event #2, Attempt #2 (original sample), all of which were COPCs/COPECs. Detection of COPCs/COPECs is prioritized when determining the recommended sample collection method, therefore these non-detected results may have impacted the number of positive COPCs/COPECs results identified, and could have affected the selection of a sample collection method. The 19 non-detected results above the PQL for Event #1, Attempt #2 and Event #2, Attempt #2 (field duplicate only) did not likely impact the selection of a sample collection method, since a larger number of positive COPC/COPECs were already identified in the HSM sample collected during these events than other sample collection methods.

### 3.5 Representativeness

Representativeness is the degree to which a data set accurately represents the characteristics of a population, parameter conditions at a sample point, or an environmental condition. Data are representative when all sampling and analyses are performed in compliance with appropriate procedures. Performing sample analyses within the specified holding times and adhering to sample handling and storage requirements are also critical elements in obtaining representative sample data. These elements were evaluated and considered during data verification/validation. Acceptance criteria for sample handling, storage and holding times are provided in Worksheets #19-1 of the QAPP.

With respect to the results of the Phase I CSO/SWO Investigation data, there are no limitations on the data usage based on representativeness acceptance criteria. The following table summarizes the Phase I representativeness quality evaluation by analytical group and sampling technique. The "x" designation indicates that an issue was identified however, such issue does not infer that the data is unusable. A more detailed discussion of this data quality parameter evaluation is provided in Section 4.1 of this report.

| Holding Time Violations | | | | |
|---|---|---|---|---|
| **Analytical Groups** | **Whole Water** | **LSM** | **HSM** | **Grab Water** |
| Semivolatile Organics | | | x | - |
| Volatile Organics (trace) | | - | | - |
| Aroclor PCBs | x | x | | - |
| Organochlorine Pesticides | | | x | - |
| Semivolatile Organics (SIM) | x | | x | - |
| Metals | | - | - | |
| Mercury | x | - | - | |
| Methylmercury | | - | - | |
| Cyanide | | - | | - |
| PCDD/PCDFs | | x | | - |
| PCB Congeners | | | | - |
| Chlorinated Herbicides | | x | | - |
| TOC/POC/DOC | | x | | - |
| TEPH | | - | x | - |
| TSS | | | | x |
| TDS | | | | x |
| Grain Size | | - | - | - |

- = analysis was not performed for this analytical group
x = data qualified during validation for this analytical group

### 3.6 Comparability

Comparability expresses the confidence with which one set of data can be compared to another to measure the same property. Data can be compared to the degree that their accuracy, precision, and representativeness are known and documented. Data are comparable if QC measures such as collection techniques, measurement procedures, analytical methods, and reporting units are equivalent for the samples within a sample set. Data subject to established quality assurance/quality control (QA/QC) measures are deemed more reliable and, therefore, more comparable, than data generated without such measures.

Consistent application of prescribed procedures was monitored throughout Phase I of the CSO/SWO Investigation program. Likewise, specific data verification/validation protocols were consistently applied to all data generated under this program to understand and document accuracy/bias, accuracy/bias contamination, precision, sensitivity and representativeness, thereby establishing comparability as defined above.

During data validation activities, analytical data were evaluated using a defined set of guidelines and acceptance criteria. In addition, data validation qualifiers were consistently applied to the analytical data generated during the Phase I CSO/SWO Investigation program. The data validation process serves to increase the degree of data comparability achieved.

With respect to the results of the Phase I CSO/SWO Investigation data, there are no limitations on the data usage based on representativeness acceptance criteria.

### 3.7 Field and Analytical Completeness

There are two measures of completeness defined for the CSO/SWO Investigation program: field completeness and analytical completeness. Field completeness is defined as the ratio of the number of samples received in acceptable condition by the laboratories to the number of samples planned to be collected as specified in the QAPP. Analytical completeness is defined as the ratio of total analytical data results reported to the total number of analytical results requested on samples submitted for analysis. The formulas used to compute field and analytical completeness are presented below.

% Field Completeness = [illegible] 100

% Analytical Completeness = [illegible] 100

The targeted field and analytical completeness goals were 90% for the CSO/SWO Investigation program; these goals were met, or exceeded, as summarized below.

| CSO/SWO Investigation | Completeness Goal Established in CSO/SWO Investigation QAPP | Phase I CSO/SWO Investigation Completeness Achieved |
|---|---|---|
| Field Completeness (Overall) | 90% | 100% |
| Analytical Completeness (Overall) | 90% | 100% |

**Phase I CSO/SWO Investigation Field Completeness by Analysis and Collection Method**

| Analytical Group | Number of Samples Collected by Sample Type | | | | Total Number of Samples Collected | Total Number of Samples Planned | Completeness Achieved (%) |
|---|---|---|---|---|---|---|---|
| | Whole Water | LSM[1] | HSM[1] | Grab Water[2] | | | |
| Semivolatile Organics | 4 | 8 | 8 | - | 20 | 20 | 100 |
| Volatile Organics | 4 | - | 8 | - | 12 | 12 | 100 |
| Aroclor PCBs | 4 | 8 | 8 | | 20 | 20 | 100 |
| Organochlorine Pesticides | 4 | 8 | 8 | - | 20 | 20 | 100 |
| Semivolatile Organics (SIM) | 4 | 8 | 8 | - | 20 | 20 | 100 |
| Metals | 4 | - | - | 8 | 12 | 12 | 100 |
| Mercury | 4 | - | - | 8 | 12 | 12 | 100 |
| Methylmercury | 4 | - | - | 8 | 12 | 12 | 100 |
| Cyanide | 4 | - | 8 | - | 12 | 12 | 100 |
| PCDD/PCDFs | 4 | 8 | 8 | - | 20 | 20 | 100 |
| PCB Congeners | 4 | 8 | 8 | - | 20 | 20 | 100 |
| Chlorinated Herbicides | 6 | 12 | 12 | - | 30 | 20 | 150 |
| TOC/POC/DOC[3] | 4 | 8 | 8 | - | 20 | 20 | 100 |
| TEPH | 4 | - | 8 | - | 12 | 12 | 100 |
| TSS | 6 | 6 | 6 | - | 18 | 12 | 150 |
| TDS | 6 | 6 | 6 | - | 18 | 12 | 150 |
| Grain Size | 4 | - | - | - | 4 | 4 | 100 |

1 – Particulate and dissolved samples
2 – Total and dissolved samples
3 – TOC, POC and DOC analyses are mutually exclusive. Therefore, only one of the three analyses is performed per sample type.

**Phase 1 CSO/SWO Investigation Analytical Completeness by Analysis and Collection Method**

**Whole Water**

| Analytical Group | Samples Analyzed Including Trip Blanks | Analytes per Sample | Total Results | Rejected Results | Analytical Completeness Achieved |
|---|---|---|---|---|---|
| Semivolatile Organics | 4 | 50 | 200 | 0 | 100% |
| Volatile Organics | 6 | 6 | 36 | 0 | 100% |
| Aroclor PCBs | 4 | 9 | 36 | 0 | 100% |
| Organochlorine Pesticides | 4 | 28 | 112 | 0 | 100% |
| Semivolatile Organics (SIM) | 4 | 30 | 120 | 0 | 100% |
| Metals | 3 | 23 | 69 | 0 | 100% |
| Mercury | 3 | 1 | 3 | 0 | 100% |
| Methyl mercury | 3 | 1 | 3 | 0 | 100% |
| Cyanide | 4 | 1 | 4 | 0 | 100% |
| PCDD/PCDFs | 6 | 17 | 102 | 0 | 100% |

| | | | | | |
|---|---|---|---|---|---|
| PCB Congeners | 6 | 168 | 1008 | 0 | 100% |
| Chlorinated Herbicides | 6 | 4 | 24 | 0 | 100% |
| TOC | 4 | 1 | 4 | 0 | 100% |
| TEPH | 4 | 1 | 4 | 0 | 100% |
| Grain Size | 4 | 85 | 340 | 0 | 100% |
| TSS | 6 | 1 | 6 | 0 | 100% |
| TDS | 6 | 1 | 6 | 0 | 100% |

**LSM Particulate**

| Analytical Group | Samples Analyzed Including Trip Blanks | Analytes per Sample | Total Results | Rejected Results | Analytical Completeness Achieved |
|---|---|---|---|---|---|
| Semivolatile Organics | 4 | 50 | 200 | 10 | 95% |
| Aroclor PCBs | 4 | 9 | 36 | 0 | 100% |
| Organochlorine Pesticides | 4 | 28 | 112 | 1 | 99% |
| Semivolatile Organics (SIM) | 4 | 30 | 120 | 0 | 100% |
| PCDD/PCDFs | 6 | 17 | 102 | 0 | 100% |
| PCB Congeners | 6 | 168 | 1008 | 0 | 100% |
| Chlorinated Herbicides | 6 | 4 | 24 | 0 | 100% |
| POC | 4 | 1 | 4 | 0 | 100% |

**LSM Dissolved**

| Analytical Group | Samples Analyzed Including Trip Blanks | Analytes per Sample | Total Results | Rejected Results | Analytical Completeness Achieved |
|---|---|---|---|---|---|
| Semivolatile Organics | 4 | 50 | 200 | 1 | 99.5% |
| Aroclor PCBs | 4 | 9 | 36 | 0 | 100% |
| Organochlorine Pesticides | 4 | 28 | 112 | 0 | 100% |
| Semivolatile Organics (SIM) | 4 | 30 | 120 | 0 | 100% |
| PCDD/PCDFs | 6 | 17 | 102 | 0 | 100% |
| PCB Congeners | 6 | 168 | 1008 | 0 | 100% |
| Chlorinated Herbicides | 6 | 4 | 24 | 0 | 100% |
| DOC | 4 | 1 | 4 | 0 | 100% |
| TSS | 4 | 1 | 4 | 0 | 100% |
| TDS | 4 | 1 | 4 | 0 | 100% |

**HSM Particulate**

| Analytical Group | Samples Analyzed Including Trip Blanks | Analytes per Sample | Total Results | Rejected Results | Analytical Completeness Achieved |
|---|---|---|---|---|---|
| Semivolatile Organics | 4 | 50 | 200 | 2 | 99% |
| Volatile Organics | 9 | 6 | 54 | 25 | 53.7% |
| Aroclor PCBs | 4 | 9 | 36 | 0 | 100% |
| Organochlorine Pesticides | 4 | 28 | 112 | 6 | 94.6% |
| Semivolatile Organics (SIM) | 4 | 30 | 120 | 0 | 100% |
| Cyanide | 4 | 1 | 4 | 0 | 100% |
| PCDD/PCDFs | 6 | 17 | 102 | 0 | 100% |
| PCB Congeners | 6 | 168 | 1008 | 0 | 100% |
| Chlorinated Herbicides | 6 | 4 | 24 | 0 | 100% |
| TOC | 4 | 1 | 4 | 0 | 100% |
| TEPH | 4 | 1 | 4 | 0 | 100% |

**HSM Dissolved**

| Analytical Group | Samples Analyzed Including Trip Blanks | Analytes per Sample | Total Results | Rejected Results | Analytical Completeness Achieved |
|---|---|---|---|---|---|
| Semivolatile Organics | 4 | 50 | 200 | 16 | 92% |
| Volatile Organics | 6 | 6 | 36 | 0 | 100% |
| Aroclor PCBs | 4 | 9 | 36 | 0 | 100% |
| Organochlorine Pesticides | 4 | 28 | 112 | 0 | 100% |
| Semivolatile Organics (SIM) | 4 | 30 | 120 | 0 | 100% |
| Cyanide | 4 | 1 | 4 | 0 | 100% |
| PCDD/PCDFs | 6 | 17 | 102 | 0 | 100% |
| PCB Congeners | 6 | 168 | 1008 | 0 | 100% |
| Chlorinated Herbicides | 6 | 4 | 24 | 0 | 100% |
| DOC | 4 | 1 | 4 | 0 | 100% |
| TEPH | 4 | 1 | 4 | 0 | 100% |
| TSS | 8 | 1 | 8 | 0 | 100% |
| TDS | 8 | 1 | 8 | 0 | 100% |

**Grab Samples**

| Analytical Group | Samples Analyzed Including Trip Blanks | Analytes per Sample | Total Results | Rejected Results | Analytical Completeness Achieved |
|---|---|---|---|---|---|
| Metals | 12 | 23 | 276 | 0 | 99.5% |
| Mercury | 12 | 1 | 12 | 0 | 100% |
| Methylmercury | 12 | 1 | 12 | 0 | 100% |
| TSS | 2 | 1 | 2 | 0 | 100% |
| TDS | 1 | 1 | 1 | 0 | 100% |

## 4. Phase I CSO/SWO Investigation Data Verification/Validation

Phase I CSO/SWO Investigation analytical results were provided by the laboratories both electronically and in hard copy format. Upon receipt from the laboratory, results for specific analytical groups described below were verified or validated by Environmental Data Services, Ltd. (EDS) using the following procedures:

| | |
|---|---|
| Semivolatile Organics | USEPA Region 2 SOP HW-35, Revision 1 |
| Volatile Organics (trace) | USEPA Region 2 SOP HW-34, Revision 1 |
| Aroclor PCBs | USEPA Region 2 SOP HW-37, Revision 1 |
| Organochlorine Pesticides | EDS SOP: Organochlorine Pesticides by HRGC/HRMS USEPA 1699, Rev .0, 7/10 |
| Semivolatile Organics (SIM) | USEPA Region 2 HW-35, Revision 1 |
| Metals | EDS SOP: Metals by ICP/MS USEPA 1638, Rev.0, 7/10 |
| Mercury | EDS SOP: Mercury by CVAFS USEPA 1631, Rev.0, 7/10 |
| Methylmercury | EDS SOP: Methyl Mercury by CVAFS USEPA 1630, Rev.0, 7/10 |
| Cyanide | USEPA Region 2 SOP HW-2, Revision 13 |
| PCDD/PCDFs | USEPA Region 2 SOP HW-25, Revision 3 |
| PCB Congeners | EDS SOP: Congener PCB, Rev. 3, 7/10 |
| Chlorinated Herbicides | USEPA Region 2 SOP HW-17, Revision 3 |
| TOC (solid/liquid)/DOC/POC | EDS SOP:TOC-01 Rev.2, 7/10 |
| TEPH | EDS SOP:TEPH-01 Rev. 3, 7/07 |
| TSS | EDS SOP: TSS by Gravimetric SM 2540D, Rev. 0, 7/10 |
| TDS | EDS SOP: TDS by Gravimetric SM 2540C, Rev. 0, 7/10 |
| Grain Size | SOP-14, Revision 2 – Verification/Validation Geotechnical Data |

The verification/validation standard operating procedures (SOPs ), as referenced above, are provided in Appendix C of the QAPP. The data verification/validation process is detailed in Worksheets #34, 35, and 36 of the QAPP.

### 4.1 Data Quality Issues

Two types of data quality issues are discussed in this section; systematic data quality issues and random data quality issues. Systematic data quality issues are those that are identified as having a consistent impact on the quality of results reported (i.e., data quality of all samples and/or analytical groups are affected by a single data quality issue), due to a common circumstance or procedural application. Systematic data quality issues are described in Sections 4.1.1, 4.1.3, 4.1.5, and 4.1.7 as well as incorporated into Sections 4.1.2, 4.1.4, 4.1.6, and 4.1.8. Random data quality issues are those that do not have a consistent impact the quality of results (i.e., data quality for a specific sample(s) and/or analyte(s) are affected by the data quality issue). Random data quality issues are presented in Sections 4.1.2, 4.1.4, 4.1.6, and 4.1.8.

Sections 4.1.2, 4.1.4, 4.1.6, and 4.1.8 summarizes the data validation findings related to systematic and random data quality issues for each analytical group. These validation findings have been separated into two distinct categories, major data quality issues and minor data quality issues. Major data quality issues are those that result in the qualification of the analytical value reported as "R", or rejected. This occurs due to the presence of significant QA/QC problems that render the analysis invalid and the results unusable. Minor data quality issues include all other QA/QC problems identified during the data validation process that require sample results to be qualified, indicating some level of uncertainty associated with the reported result. Qualifiers applied to sample results were assigned based on the validation protocols specified in Worksheet #36 of the QAPP.

Conclusions based on the information presented in these summaries can be found in Section 5 of this report.

### 4.1.1 Whole Water Samples Systematic Data Quality Issues

Four systematic data quality issues were identified during thePhase I CSO/SWO Investigation data whole water sample validation task. These systematic data quality issues are summarized below:

- All internal standard recoveries for 13C-PCB-205 were outside the quality control limits. All results for PCB-205 were qualified as estimated.
- All field blanks contained hexachlorobenzene, 2,4'-DDE, 4,4'-DDE, 2,4'-DDD, 2,4'-DDT, 4,4'-DDD and 4,4'-DDT resulting in the positive results being qualified non-detected "U".
- All field blanks contained butylbenzylphthalate resulting in the positive results being qualified non-detected "U".
- All surrogate recoveries for Decachlorobiphenyl were outside the quality control limit. All non-detected results for Aroclors were qualified as estimated.

### 4.1.2 Whole Water Samples Systematic and Random Data Quality Issues by Analytical Group

**Semivolatile Organic Compounds**

The Phase I CSO/SWO Investigation whole water sample SVOC dataset is comprised of four samples with 200 associated results.

No major data quality issues were identified during validation of the Phase I CSO/SWO Investigation SVOC analyses.

Five minor data quality issues were identified in the Phase I CSO/SWO Investigation whole water SVOC dataset. The identified minor data quality issues are described in the table below.

| Minor Data Quality Issues | | | | | |
|---|---|---|---|---|---|
| **Semivolatile Whole Water** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of SVOC Results Affected** |
| Field blank contamination | Accuracy/Bias Contamination | 200 | 4 | 4 | 2.0 |
| Non-compliant continuing calibration percent difference | Overall Accuracy/Bias | 200 | 4 | 6 | 3.0 |
| Non-compliant internal standard recovery | Overall Accuracy/Bias | 200 | 1 | 1 | 0.50 |
| Non-compliant method surrogate recovery | Overall Accuracy/Bias | 200 | 3 | 9 | 4.5 |
| Non-compliant project specific surrogate recovery, as specified by USEPA Region 2 | Overall Accuracy/Bias | 200 | 4 | 14 | 7.0 |

**Volatile Organic Compounds (trace)**

The Phase I CSO/SWO Investigation whole water VOC (trace) dataset is comprised of four samples with 24 associated results.

No major or minor data quality issues were identified during validation of the Phase I CSO/SWO Investigation VOC (trace) analyses.

**Aroclor Polychlorinated Biphenyls**

The Phase I CSO/SWO Investigation whole water Aroclor PCB dataset is comprised of four samples with 36 associated results.

No major data quality issues were identified during validation of the Phase I CSO/SWO Investigation Aroclor PCB analyses.

Three minor data quality issues were identified in the Phase I CSO/SWO Investigation whole water Aroclor PCB dataset. The identified minor data quality issues are described in the table below.

| Minor Data Quality Issues | | | | | |
|---|---|---|---|---|---|
| **Aroclor PCB Whole Water** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of Aroclor PCB Results Affected** |
| Non-compliant holding time | Representativeness | 36 | 2 | 18 | 50.0 |
| Non-compliant continuing calibration percent difference | Overall Accuracy/Bias | 36 | 2 | 2 | 5.6 |
| Non-compliant method surrogate recovery | Overall Accuracy/Bias | 36 | 4 | 36 | 100 |

**Organochlorine Pesticides**

The Phase I CSO/SWO Investigation whole water Organochlorine Pe sticide dataset is comprised of four samples with 112 associated results.

No major data quality issues were identified during validation of the Phase I CSO/SWO Investigation Organochlorine Pesticide analyses.

Six minor data quality issues were identified in the Phase I CSO/SWO Investigation whole water Organochlorine Pesticide dataset. The identified minor data quality issues are described in the table below.

| **Minor Data Quality Issues** | | | | | |
|---|---|---|---|---|---|
| **Organochlorine Pesticide Whole Water** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of Organochlorine Pesticide Results Affected** |
| Field blank contamination | Accuracy/Bias Contamination | 112 | 4 | 29 | 25.9 |
| Non-compliant qualitative requirements | Overall Accuracy/Bias | 112 | 1 | 1 | 0.9 |
| Non-compliant matrix spike/matrix spike duplicate relative percent difference | Precision | 112 | 2 | 6 | 5.4 |
| Non-compliant field duplicate relative percent difference | Precision | 112 | 2 | 2 | 1.8 |
| Non-compliant internal standard recovery | Overall Accuracy/Bias | 112 | 3 | 74 | 66.1 |
| Non-complaint project specific surrogate recovery, as specified by USEPA Region 2 | Overall Accuracy/Bias | 112 | 4 | 22 | 19.6 |

**Semivolatile Organic Compounds - Selective Ion Monitoring**

The Phase I CSO/SWO Investigation whole water SVOCs SIM dataset is comprised of four samples with 120 associated results.

No major data quality issues were identified during validation of the Phase I CSO/SWO Investigation SVOCs SIM analyses.

Six minor data quality issues were identified in the Phase I CSO/SWO Investigation whole water SVOCs SIM dataset. The identified minor data quality issues are described in the table below.

| **Minor Data Quality Issues** | | | | | |
|---|---|---|---|---|---|
| **Semivolatile SIM Whole Water** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of SVOC SIM Results Affected** |
| Non-compliant holding time | Representativeness | 120 | 2 | 60 | 50.0 |
| Method blank contamination | Accuracy/Bias Contamination | 120 | 2 | 2 | 1.7 |
| Field blank contamination | Accuracy/Bias Contamination | 120 | 3 | 23 | 19.2 |
| Non-compliant initial calibration relative standard deviation | Overall Accuracy/Bias | 120 | 2 | 2 | 1.7 |
| Non-compliant project specific surrogate recovery, as specified by USEPA Region 2 | Overall Accuracy/Bias | 120 | 1 | 7 | 5.8 |
| Non-compliant field duplicate relative percent difference | Precision | 120 | 4 | 64 | 53.3 |

**Metals**

The Phase I CSO/SWO Investigation whole water Metals dataset is comprised of four samples with 92 associated results.

No major data quality issues were identified during validation of the Phase I CSO/SWO Investigation Metals analyses.

Two minor data quality issues were identified in the Phase I CSO/SWO Investigation whole water Metals dataset. The identified minor data quality issues are described in the table below.

| **Minor Data Quality Issues** | | | | | |
|---|---|---|---|---|---|
| **Metals Whole Water** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of Metals Results Affected** |
| Field blank contamination | Accuracy/Bias Contamination | 92 | 4 | 6 | 6.5 |
| Continuing calibration blank contamination | Accuracy/Bias Contamination | 92 | 2 | 4 | 4.4 |

**Mercury**

The Phase I CSO/SWO Investigation whole water Mercury dataset is comprised of four samples with four associated results.

No major data quality issues were identified during validation of the Phase I CSO/SWO Investigation Mercury analyses.

Two minor data quality issues were identified in the Phase I CSO/SWO Investigation whole water Mercury dataset. The identified minor data quality issues are described in the table below.

| Minor Data Quality Issues | | | | | |
|---|---|---|---|---|---|
| **Mercury Whole Water** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of Mercury Results Affected** |
| Non-compliant holding time | Representativeness | 4 | 4 | 4 | 100 |
| Non-compliant field duplicate relative percent difference | Precision | 4 | 4 | 4 | 100 |

**Methyl Mercury**

The Phase I CSO/SWO Investigation whole water Methyl Mercury data set is comprised of four samples with four associated results.

No major or minor data quality issues were identified during validation of the Phase I CSO/SWO Investigation Methyl Mercury analyses.

**Cyanide**

The Phase I CSO/SWO Investigation whole water Cyanide dataset is comprised of four samples with four associated results.

No major data quality issues were identified during validation of the Phase I CSO/SWO Investigation Cyanide analyses.

One minor data quality issue was identified in the Phase I CSO/SWO Investigation whole water Cyanide dataset. The identified minor data quality issue is described in the table below.

| Minor Data Quality Issues | | | | | |
|---|---|---|---|---|---|
| **Cyanide Whole Water** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of Cyanide Results Affected** |
| Field blank contamination | Accuracy/Bias Contamination | 4 | 2 | 2 | 50.0 |

**Polychlorinated Dibenzo-p-dioxins / Polychlorinated Dibenzofurans**

The Phase I CSO/SWO Investigation whole water PCDD/PCDFs dataset is comprised of six samples with 102 associated results.

No major data quality issues were identified during validation of the Phase I CSO/SWO Investigation PCDD/PCDF analyses.

Five minor data quality issues were identified in the Phase I C SO/SWO Investigation whole water PCDD/PCDF dataset. The identified minor data quality issues are described in the table below.

| Minor Data Quality Issues | | | | | |
|---|---|---|---|---|---|
| **PCDD/PCDFs Whole Water** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of PCDD/PCDF Results Affected** |
| Field blank contamination | Accuracy/Bias Contamination | 102 | 2 | 7 | 6.9 |
| Non-compliant matrix spike/matrix spike duplicate recovery | Overall Accuracy/Bias | 102 | 1 | 1 | 1.0 |
| Non-compliant matrix spike/matrix spike duplicate relative percent difference | Precision | 102 | 1 | 1 | 1.08 |
| Non-compliant field duplicate relative percent difference | Precision | 102 | 4 | 10 | 9.8 |
| Non-complaint project specific labeled analog recovery, as specified by USEPA Region 2 | Overall Accuracy/Bias | 102 | 4 | 17 | 16.7 |

**Polychlorinated Biphenyl Congeners**

The Phase I CSO/SWO Investigation whole water PCB Congener dataset is comprised of six samples with 1,008 associated results.

No major data quality issues were identified during validationof the Phase I CSO/SWO Investigation PCB Congener analyses.

Four minor data quality issues were identified in the Phase I C SO/SWO Investigation whole water PCB Congener dataset. The identified minor data quality issues are described in the table below.

| Minor Data Quality Issues | | | | | |
|---|---|---|---|---|---|
| **PCB Congeners Whole Water** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of PCB Congener Results Affected** |
| Field blank contamination | Accuracy/Bias Contamination | 1,008 | 5 | 123 | 12.2 |
| Non-compliant field duplicate relative percent difference | Precision | 1,008 | 6 | 266 | 26.4 |
| Non-compliant internal standard recovery | Overall Accuracy/Bias | 1,008 | 6 | 308 | 30.6 |
| Non-complaint project specific labeled analog recovery, as specified by USEPA Region 2 | Overall Accuracy/Bias | 1,008 | 2 | 58 | 5.8 |

**Chlorinated Herbicides**

The Phase I CSO/SWO Investigation whole water Chlorinated Herbi cide dataset is comprised of six samples with 24 associated results.

No major data quality issues were identified during validation of the Phase I CSO/SWO Investigation Chlorinated Herbicide analyses.

Four minor data quality issues were identified in the Phase I C SO/SWO Investigation whole water Chlorinated Herbicide dataset. The indentified minor data quality issues are described in the table below.

| Minor Data Quality Issues | | | | | |
|---|---|---|---|---|---|
| **Chlorinated Herbicide Whole Water** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of Chlorinated Herbicide Results Affected** |
| Method blank contamination | Accuracy/Bias Contamination | 24 | 2 | 2 | 8.3 |
| Field blank contamination | Accuracy/Bias Contamination | 24 | 4 | 7 | 29.2 |
| Non-compliant continuing calibration percent difference | Overall Accuracy/Bias | 24 | 2 | 2 | 8.3 |
| Non-compliant dual column analysis percent difference | Precision | 24 | 4 | 9 | 37.5 |

**Total Organic Carbon**

The Phase I CSO/SWO Investigation whole water TOC dataset is co mprised of four samples with four associated results.

No major data quality issues were identified during validationof the Phase I CSO/SWO Investigation TOC analyses.

One minor data quality issue was identified in the Phase I CSO/ SWO Investigation whole water TOC dataset. The identified minor data quality issue is describedin the table below.

| Minor Data Quality Issues | | | | | |
|---|---|---|---|---|---|
| **TOC Whole Water** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of TOC Results Affected** |
| Field blank contamination | Accuracy/Bias Contamination | 4 | 2 | 2 | 50.0 |

**Total Extractable Petroleum Hydrocarbon**

The Phase I CSO/SWO Investigation whole water TEPH dataset is comprised of four samples with four associated results.

No major data quality issues were identified during validation of the Phase I CSO/SWO TEPH Investigation analyses.

Three minor data quality issues were identified in the Phase I CSO/SWO Investigation whole water TEPH data set. The identified minor data quality issues are described in the table below.

| **Minor Data Quality Issues** | | | | | |
|---|---|---|---|---|---|
| **TEPH Whole Water** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of TEPH Results Affected** |
| Non-compliant initial calibration relative standard deviation | Overall Accuracy/Bias | 4 | 2 | 2 | 50.0 |
| Non-compliant continuing calibration percent difference | Overall Accuracy/Bias | 4 | 2 | 2 | 50.0 |
| Non-compliant field duplicate relative percent difference | Precision | 4 | 4 | 4 | 100 |

**Total Suspended Solids**

The Phase I CSO/SWO Investigation whole water TSS dataset is comprised of four samples with four associated results.

No major data quality issues were identified during validation of the Phase I CSO/SWO Investigation TSS analyses.

One minor data quality issue was identified in the Phase I CSO/SWO Investigation whole water TSS dataset. The identified minor data quality issue is described in the table below.

| **Minor Data Quality Issues** | | | | | |
|---|---|---|---|---|---|
| **TSS Whole Water** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of TSS Results Affected** |
| Non-compliant field duplicate relative percent difference | Precision | 4 | 4 | 4 | 100 |

**Total Dissolved Solids**

The Phase I CSO/SWO Investigation whole water TDS dataset is co mprised of four samples with four associated results.

No major data quality issues were identified during validationof the Phase I CSO/SWO Investigation TDS analyses.

One minor data quality issue was identified in the Phase I CSO/ SWO Investigation whole water TDS dataset. The identified minor data quality issue is describedin the table below.

| Minor Data Quality Issues | | | | | |
|---|---|---|---|---|---|
| **TDS Whole Water** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of TDS Results Affected** |
| Field blank contamination | Accuracy/Bias Contamination | 4 | 2 | 2 | 50.0 |

## Geotechnical

The Phase I CSO/SWO Investigation Whole Water grain size datase t is comprised of four samples with 340 associated results.

No major or minor data quality issues were identified during th e verification of the Phase I CSO/SWO Investigation grain size analyses.

### 4.1.3 Low Solids Mass Samples Systematic Data Quality Issues

Four systematic data quality issue was identified during the Ph ase I CSO/SWO Investigation data LSM sample validation task. These systematic data quality issues are summarized below:

- Field blanks associated with all samples contained hexachlorobenzene, 4,4'-DDE, 2,4'-DDD, 2,4'-DDT, 4,4'-DDD and 4,4'-DDT resulting in the positive results being qualified non-detected "U".
- All closing continuing calibration percent differences for Di-n-octylphthalate were outside the quality control limit. All results for Di-n-octylphthalate were qualified as estimated.
- All field blanks contained PCB-11, PCB-16/32, PCB-17, PCB-18, PCB-19, PCB-20/21/33 and PCB-22 resulting in the positive results being qualified non-detected "U".
- Due to actual TSS values being lower than estimated, LSM Particulate sample masses were much lower than anticipated. This resulted in all analytical groups having reporting limits well in excess of project quantitation limits stated in the QAPP.

### 4.1.4 Low Solids Mass Samples Systematic and Random Data Quality Issues by Analytical Group

**Low Solids Mass Dissolved**

**Semivolatile Organic Compounds**

The Phase I CSO/SWO Investigation LSM dissolved sample SVOC dataset is comprised of four samples with 200 associated results.

One major data quality issue was identified during validation of the Phase I CSO/SWO Investigation LSM dissolved SVOC analyses. The internal standard perylene-d12 exhibited a recovery below the quality control limit for sample PR1CSOCLYLD-01B for di-n-octylphthalate. The identified major data quality issue is described in the table below.

| **Major Data Quality Issues** | | | | | |
|---|---|---|---|---|---|
| **Semivolatile LSM Dissolved** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of SVOC Results Affected** |
| Extremely poor internal standard recovery | Overall Accuracy/Bias | 200 | 1 | 1 | 0.50 |

Five minor data quality issues were identified in the Phase I CSO/SWO Investigation LSM dissolved SVOC dataset. The identified minor data quality issues are described in the table below.

| **Minor Data Quality Issues** | | | | | |
|---|---|---|---|---|---|
| **Semivolatile LSM Dissolved** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of SVOC Results Affected** |
| Field blank contamination | Accuracy/Bias Contamination | 200 | 3 | 4 | 2.0 |
| Non-compliant continuing calibration percent difference | Overall Accuracy/Bias | 200 | 4 | 8 | 4.0 |
| Non-compliant method surrogate recovery | Overall Accuracy/Bias | 200 | 2 | 6 | 3.0 |
| Non-compliant project specific surrogate recovery, as specified by USEPA Region 2 | Overall Accuracy/Bias | 200 | 4 | 23 | 11.5 |
| Non-compliant field duplicate relative percent difference | Precision | 200 | 2 | 4 | 2.0 |

**Aroclor Polychlorinated Biphenyls**

The Phase I CSO/SWO Investigation LSM dissolved sample Aroclor PCB dataset is comprised of four samples with 36 associated results.

No major data quality issues were identified during validation of the Phase I CSO/SWO Investigation Aroclor PCB analyses.

One minor data quality issue was identified in the Phase I CSO/SWO Investigation LSM dissolved Aroclor PCB dataset. The identified minor data quality issue is described in the table below.

| **Minor Data Quality Issues** | | | | | |
|---|---|---|---|---|---|
| **Aroclor PCBs LSM Dissolved** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of Aroclor PCB Results Affected** |
| Non-compliant holding time | Representativeness | 36 | 2 | 18 | 50.0 |

**Organochlorine Pesticides**

The Phase I CSO/SWO Investigation LSM dissolved sample Organochlorine Pesticide dataset is comprised of four samples with 112 associated results.

No major data quality issues were identified during validation of the Phase I CSO/SWO Investigation Organochlorine Pesticide analyses.

Four minor data quality issues were identified in the Phase I CSO/SWO Investigation LSM dissolved Organochlorine Pesticide dataset. The identified minor data quality issues are described in the table below.

| **Minor Data Quality Issues** | | | | | |
|---|---|---|---|---|---|
| **Organochlorine Pesticides LSM Dissolved** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of Organochlorine Pesticide Results Affected** |
| Field blank contamination | Accuracy/Bias Contamination | 112 | 4 | 30 | 26.8 |
| Non-compliant internal standard recovery | Overall Accuracy/Bias | 112 | 2 | 44 | 39.3 |
| Non-compliant project specific labeled analog recovery, as specified by USEPA Region 2 | Overall Accuracy/Bias | 112 | 4 | 18 | 16.1 |
| Non-compliant field duplicate relative percent difference | Precision | 112 | 2 | 2 | 1.8 |

**Semivolatile Organic Compounds - Select Ion Monitoring**

The Phase I CSO/SWO Investigation LSM dissolved sample SVOCs SIM dataset is comprised of four samples with 120 associated results.

No major data quality issues were identified during validation of the Phase I CSO/SWO Investigation SVOCs SIM analyses.

Seven minor data quality issues were identified in the Phase I CSO/SWO Investigation LSM dissolved SVOCs SIM dataset. The identified minor data quality issues are described in the table below.

| **Minor Data Quality Issues** | | | | | |
|---|---|---|---|---|---|
| **Semivolatile SIM LSM Dissolved** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of SVOC SIM Results Affected** |
| Field blank contamination | Accuracy/Bias Contamination | 120 | 4 | 26 | 21.7 |
| Non-compliant initial calibration relative standard deviation | Overall Accuracy/Bias | 120 | 2 | 2 | 1.7 |
| Non-compliant continuing calibration percent difference | Overall Accuracy/Bias | 120 | 2 | 2 | 1.7 |
| Non-compliant method surrogate recovery | Overall Accuracy/Bias | 120 | 1 | 16 | 13.3 |
| Non-compliant project specific surrogate recovery, as specified by USEPA Region 2 | Overall Accuracy/Bias | 120 | 1 | 16 | 13.3 |
| Non-compliant matrix spike/matrix spike duplicate recovery | Overall Accuracy/Bias | 120 | 1 | 12 | 10.0 |
| Non-compliant field duplicate relative percent difference | Precision | 120 | 2 | 14 | 11.7 |

**Polychlorinated Dibenzo-p-dioxins / Polychlorinated Dibenzofurans**

The Phase I CSO/SWO Investigation LSM dissolved sample PCDD/PCDFs dataset is comprised of six samples with 102 associated results.

No major data quality issues were identified during validation of the Phase I CSO/SWO Investigation PCDD/PCDFs analyses.

Three minor data quality issues were identified in the Phase I CSO/SWO Investigation LSM dissolved PCDD/PCDFs dataset. The identified minor data quality issues are described in the table below.

| Minor Data Quality Issues | | | | | |
|---|---|---|---|---|---|
| **PCDD/PCDFs LSM Dissolved** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of PCDD/PCDF Results Affected** |
| Non-compliant holding time | Representativeness | 102 | 2 | 34 | 33.3 |
| Field blank contamination | Accuracy/Bias Contamination | 102 | 4 | 10 | 9.8 |
| Non-compliant project specific labeled analog recovery, as specified by USEPA Region 2 | Overall Accuracy/Bias | 102 | 6 | 63 | 61.8 |

**Polychlorinated Biphenyl Congeners**

The Phase I CSO/SWO Investigation LSM dissolved PCB Congener da taset is comprised of six samples with 1,008 associated results.

No major data quality issues were identified during validationof the Phase I CSO/SWO Investigation PCB Congener analyses.

Three minor data quality issues were identified in the Phase I CSO/SWO Investigation LSM dissolved PCB Congener dataset. The identified minor data quality issues are described in the table below.

| Minor Data Quality Issues | | | | | |
|---|---|---|---|---|---|
| **PCB Congeners LSM Dissolved** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of PCB Congener Results Affected** |
| Method blank contamination | Accuracy/Bias Contamination | 1,008 | 2 | 2 | 0.20 |
| Field blank contamination | Accuracy/Bias Contamination | 1,008 | 6 | 366 | 36.3 |
| Non-compliant project specific labeled analog recovery, as specified by USEPA Region 2 | Overall Accuracy/Bias | 1,008 | 3 | 58 | 5.8 |

**Chlorinated Herbicides**

The Phase I CSO/SWO Investigati on LSM dissolved Chlorinated Her bicide dataset is comprised of six samples with 24 associated results.

No major data quality issues were identified during validation of the Phase I CSO/SWO Investigation Chlorinated Herbicide analyses.

Six minor data quality issues were identified in the Phase I CS O/SWO Investigation LSM dissolved Chlorinated Herbicide dataset. The identified minor data quality issues are described in the table below.

| Minor Data Quality Issues | | | | | |
|---|---|---|---|---|---|
| **Chlorinated Herbicide LSM Dissolved** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of Chlorinated Herbicide Results Affected** |
| Non-compliant holding time | Representativeness | 24 | 2 | 8 | 33.3 |
| Method blank contamination | Accuracy/Bias Contamination | 24 | 1 | 2 | 8.3 |
| Field blank contamination | Accuracy/Bias Contamination | 24 | 4 | 9 | 37.5 |
| Non-compliant surrogate recovery | Overall Accuracy/Bias | 24 | 1 | 2 | 8.3 |
| Non-compliant column percent difference | Overall Accuracy/Bias | 24 | 4 | 9 | 37.5 |
| Non-compliant field duplicate relative percent difference | Precision | 24 | 2 | 2 | 8.3 |

**Dissolved Organic Carbon**

The Phase I CSO/SWO Investigation LSM dissolved DOC dataset is comprised of four samples with four associated results.

No major data quality issues were identified during validation of the Phase I CSO/SWO Investigation DOC analyses.

Two minor data quality issues were identified in the Phase I CSO/SWO Investigation LSM dissolved DOC dataset. The identified minor data quality issues are described in the table below.

| Minor Data Quality Issues | | | | | |
|---|---|---|---|---|---|
| **DOC LSM Dissolved** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of DOC Results Affected** |
| Non-compliant holding time | Representativeness | 4 | 2 | 2 | 50.0 |
| Field blank contamination | Accuracy/Bias Contamination | 4 | 4 | 4 | 100 |

**Total Suspended Solids**

The Phase I CSO/SWO Investigation LSM dissolved TSS dataset is comprised of six samples with six associated results.

No major or minor data quality issues were identified during validation of the Phase I CSO/SWO Investigation TSS analyses.

**Total Dissolved Solids**

The Phase I CSO/SWO Investigation LSM dissolved TDS dataset is comprised of six samples with six associated results.

No major or minor data quality issues were identified during validation of the CSO/SWO Investigation TDS analyses.

**Low Solids Mass Particulate**

**Semivolatile Organic Compounds**

The Phase I CSO/SWO Investigation LSM particulate SVOC dataset is comprised of four samples with 200 associated results.

One major data quality issue was identified during validation of the Phase I CSO/SWO Investigation LSM particulate SVOC analyses. The internal standards phenanthrene-d10, chrysene-d12 and/or perylene-d12 exhibited recoveries below the quality control limit. Two samples and ten results are associated with these non-compliant internal standard recoveries.

The following samples and results are associated with these non-compliant internal standard recoveries:

| Sample Number | Compound Affected |
|---|---|
| PR1CSOCLYLP-01B | 4,6-Dinitro-2-methylphenol |
| | N-nitrosodiphenylamine |
| | 4-Bromophenyl-phenylether |
| | Hexachlorobenzene |
| | Atrazine |
| | Pentachlorophenol |
| | Carbazole |
| | 3,3’-Dichlorobenzidine |
| | Di-n-octylphthalate |
| PR1LPDUP-01B | Di-n-octylphthalate |

The identified major data quality issues are described in the table below.

| Major Data Quality Issues | | | | | |
|---|---|---|---|---|---|
| **Semivolatile LSM Particulate** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of SVOC Results Affected** |
| Extremely poor internal standard recovery | Overall Accuracy/Bias | 200 | 2 | 10 | 5.0 |

Five minor data quality issues were identified in the Phase I CSO/SWO Investigation LSM particulate SVOC dataset. The identified minor data quality issues are described in the table below.

| **Minor Data Quality Issues** | | | | | |
|---|---|---|---|---|---|
| **Semivolatile LSM Particulate** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of SVOC Results Affected** |
| Method blank contamination | Accuracy/Bias Contamination | 200 | 2 | 4 | 2.0 |
| Field blank contamination | Accuracy/Bias Contamination | 200 | 3 | 5 | 2.5 |
| Non-compliant continuing calibration percent difference | Overall Accuracy/Bias | 200 | 4 | 7 | 3.5 |
| Non-compliant project specific surrogate recovery, as specified by USEPA Region 2 | Overall Accuracy/Bias | 200 | 4 | 31 | 15.5 |
| Non-compliant internal standard recovery | Overall Accuracy/Bias | 200 | 1 | 2 | 1.0 |

**Aroclor Polychlorinated Biphenyls (PCBs)**

The Phase I CSO/SWO Investigation LSM particulate Aroclor PCB dataset is comprised of four samples with 368 associated results.

No major or minor data quality issues were identified during validation of the Phase I CSO/SWO Investigation Aroclor PCB analyses.

**Organochlorine Pesticides**

The Phase I CSO/SWO Investigation LSM particulate Organochlorine Pesticide dataset is comprised of four samples with 112 associated results.

One major data quality issue was identified during validation of the Phase I CSO/SWO Investigation LSM particulate Organochlorine Pesticide analyses. The labeled analog 13C12-endrin aldehyde exhibited recoveries below the method quality control limit for sample PRCSOCLYLP-02B affecting the associated endrin aldehyde sample result. The identified major data quality issues are described in the table below.

| **Major Data Quality Issues** | | | | | |
|---|---|---|---|---|---|
| **Organochlorine Pesticides LSM Particulate** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of Organochlorine Pesticide Results Affected** |
| Extremely poor method labeled analog recovery | Overall Accuracy/Bias | 112 | 1 | 1 | 0.89 |

Five minor data quality issues were identified in the Phase I CSO/SWO Investigation LSM particulate Organochlorine Pesticide dataset. The identified minor data quality issues are described in the table below.

| Minor Data Quality Issues | | | | | |
|---|---|---|---|---|---|
| **Organochlorine Pesticides LSM Particulate** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of Organochlorine Pesticide Results Affected** |
| Field blank contamination | Accuracy/Bias Contamination | 112 | 4 | 33 | 29.5 |
| Non-compliant matrix spike/matrix spike duplicate relative percent difference | Precision | 112 | 1 | 3 | 2.7 |
| Non-compliant internal standard recovery | Overall Accuracy/Bias | 112 | 4 | 80 | 71.4 |
| Non-compliant method labeled analog recovery | Overall Accuracy/Bias | 112 | 1 | 1 | 0.89 |
| Non-compliant project specific labeled analog recovery, as specified by USEPA Region 2 | Overall Accuracy/Bias | 112 | 4 | 16 | 14.3 |

**Semivolatile Organic Compounds - Select Ion Monitoring**

The Phase I CSO/SWO Investigation LSM particulate SVOCs SIM dat aset is comprised of four samples with 120 associated results.

No major data quality issues were identified during validation of the Phase I CSO/SWO Investigation SVOCs SIM analyses.

Seven minor data quality issues were identified in the Phase I CSO/SWO Investigation LSM particulate SVOCs SIM dataset. The identified minor data quality issues are described in the table below.

| Minor Data Quality Issues | | | | | |
|---|---|---|---|---|---|
| **Semivolatiles SIM LSM Particulate** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of SVOC SIM Results Affected** |
| Field blank contamination | Accuracy/Bias Contamination | 120 | 4 | 28 | 23.3 |
| Non-compliant initial calibration relative standard deviation recovery | Overall Accuracy/Bias | 120 | 2 | 2 | 1.7 |
| Non-compliant project specific surrogate recovery, as specified by USEPA Region 2 | Overall Accuracy/Bias | 120 | 1 | 11 | 9.2 |
| Non-compliant matrix spike/matrix spike duplicate recovery | Overall Accuracy/Bias | 120 | 1 | 13 | 10.8 |
| Non-compliant matrix spike/matrix spike duplicate relative percent difference | Precision | 120 | 1 | 17 | 14.2 |
| Non-compliant internal standard recovery | Overall Accuracy/Bias | 120 | 2 | 6 | 5.0 |
| Non-compliant field duplicate relative percent difference | Precision | 120 | 4 | 60 | 50.0 |

**Polychlorinated Dibenzo-p-dioxins / Polychlorinated Dibenzofurans**

The Phase I CSO/SWO Investigation LSM particulate PCDD/PCDFs da taset is comprised of six samples with 102 associated results.

No major data quality issues were identified during validation of the Phase I CSO/SWO Investigation PCDD/PCDFs analyses.

Three minor data quality issues were identified in the Phase I CSO/SWO Investigation LSM particulate PCDD/PCDF dataset. The identified minor data quality issues are described in the table below.

| Minor Data Quality Issues | | | | | |
|---|---|---|---|---|---|
| **PCDD/PCDFs LSM Particulate** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of PCDD/PCDF Results Affected** |
| Field blank contamination | Accuracy/Bias Contamination | 102 | 3 | 8 | 7.84 |
| Non-compliant matrix spike/matrix spike duplicate relative percent difference | Precision | 102 | 1 | 1 | 0.98 |
| Non-compliant field duplicate relative percent difference | Precision | 102 | 4 | 12 | 11.8 |

**Polychlorinated Biphenyl Congeners**

The Phase I CSO/SWO Investigation LSM particulate PCB Congener dataset is comprised of six samples with 1,008 associated results.

No major data quality issues were identified during validationof the Phase I CSO/SWO Investigation PCB Congener analyses.

Six minor data quality issues were identified in the Phase I CSO/SWO Investigation LSM particulate PCB Congener dataset. The identified minor data quality issues are described in the table below.

| **Minor Data Quality Issues** | | | | | |
|---|---|---|---|---|---|
| **PCB Congeners LSM Particulate** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of PCB Congener Results Affected** |
| Method blank contamination | Accuracy/Bias Contamination | 1,008 | 2 | 5 | 0.50 |
| Field blank contamination | Accuracy/Bias Contamination | 1,008 | 6 | 275 | 27.3 |
| Non-compliant matrix spike/matrix spike duplicate relative percent difference | Precision | 1,008 | 1 | 1 | 0.10 |
| Non-compliant internal standard recovery | Overall Accuracy/Bias | 1,008 | 4 | 150 | 14.9 |
| Non-compliant project specific labeled analog recovery, as specified by USEPA Region 2 | Overall Accuracy/Bias | 1,008 | 3 | 8 | 0.79 |
| Non-compliant field duplicate relative percent difference | Precision | 1,008 | 19 | 19 | 0.88 |

**Chlorinated Herbicides**

The Phase I CSO/SWO Investigation LSM particulate Chlorinated H erbicide dataset is comprised of six samples with 24 associated results.

No major data quality issues were identified during validation of the Phase 1 CSO/SWO Investigation Chlorinated Herbicide analyses.

One minor data quality issue was identified in the Phase I CSO/ SWO Investigation LSM particulate Chlorinated Herbicide dataset. The identified minor data quality issue is described in the table below.

| Minor Data Quality Issues | | | | | |
|---|---|---|---|---|---|
| **Chlorinated Herbicide LSM Particulate** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of Chlorinated Herbicide Results Affected** |
| Non-compliant continuing calibration percent difference | Overall Accuracy/Bias | 24 | 2 | 2 | 8.3 |

**Particulate Organic Carbon**

The Phase I CSO/SWO Investigation LSM particulate POC dataset is comprised of four samples with four associated results.

No major or minor data quality issues were identified during validation of the Phase I CSO/SWO Investigation POC analyses.

### 4.1.5 High Solids Mass Samples Systematic Data Quality Issues

Two systematic data quality issues were identified during the Phase I CSO/SWO Investigation High Solids Mass data validation task. These systematic data quality issues are summarized below:

- All field blanks contained 2,4'-DDE, 2,4'-DDD, 2,4'-DDT and 4,4'-DDT resulting in the positive results being qualified non-detected "U".
- All closing continuing calibration percent differences for Di-n-octylphthalate were outside the quality control limit. All results for Di-n-octylphthalate were qualified as estimated.

### 4.1.6 High Solids Mass Samples Systematic and Random Data Quality Issues by Analytical Group

**<u>High Solids Mass Dissolved</u>**

**Semivolatile Organic Compounds**

The Phase I CSO/SWO Investigation HSM dissolved sample SVOC dataset is comprised of four samples with 200 associated results.

One major data quality issue was identified during validation of the Phase I CSO/SWO Investigation HSM dissolved SVOC analyses. The internal standards phenanthrene-d10 and perylene-d12 exhibited recoveries below the quality control limit. The following samples and results are associated with these non-compliant internal standard recoveries:

| Sample Number | Compound Affected |
|---|---|
| PR1CSOCLYHD-01B<br>PR1HDDUP-01B | 4,6-Dinitro-2-methylphenol |
| | N-nitrosodiphenylamine |
| | 4-Bromophenyl-phenylether |
| | Hexachlorobenzene |
| | Atrazine |
| | Pentachlorophenol |
| | Carbazole |
| | Di-n-octylphthalate |

The identified major data quality issues are described in the table below.

| **Major Data Quality Issues** | | | | | |
|---|---|---|---|---|---|
| **Semivolatiles HSM Dissolved** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of SVOC Results Affected** |
| Extremely poor internal standard recovery | Overall Accuracy/Bias | 200 | 2 | 16 | 8.0 |

Seven minor data quality issues were identified in the Phase I CSO/SWO Investigation HSM dissolved SVOC dataset. The identified minor data quality issues are described in the table below.

| **Minor Data Quality Issues** | | | | | |
|---|---|---|---|---|---|
| **Semivolatiles HSM Dissolved** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of SVOC Results Affected** |
| Field blank contamination | Accuracy/Bias Contamination | 200 | 3 | 4 | 2.0 |
| Non-compliant continuing calibration percent difference | Overall Accuracy/Bias | 200 | 4 | 14 | 7.0 |
| Non-complaint surrogate recovery | Overall Accuracy/Bias | 200 | 4 | 10 | 5.0 |
| Non-compliant matrix spike/matrix spike duplicate relative percent difference | Precision | 200 | 1 | 7 | 3.5 |
| Non-compliant internal standard recovery | Overall Accuracy/Bias | 200 | 2 | 2 | 1.0 |
| Non-compliant field duplicate relative percent difference | Precision | 200 | 2 | 4 | 2.0 |
| Non-compliant other quality issues | Overall Accuracy/Bias | 200 | 1 | 1 | 0.50 |

### Volatile Organic Compounds (VOCs)

The Phase I CSO/SWO Investigation HSM dissolved VOC dataset is comprised of four samples with 24 associated results.

No major or minor data quality issues were identified during validation of the Phase I CSO/SWO Investigation VOCs analyses.

### Aroclor Polychlorinated Biphenyls

The Phase I CSO/SWO Investigation HSM dissolved Aroclor PCB dataset is comprised of four samples with 36 associated results.

No major data quality issues were identified during validation of the Phase I CSO/SWO Investigation Aroclor PCB analyses.

One minor data quality issue was identified in the Phase I CSO/SWO Investigation HSM dissolved Aroclor PCB dataset. The identified minor data quality issue is described in the table below.

| **Minor Data Quality Issues** | | | | | |
|---|---|---|---|---|---|
| **Aroclor PCBs HSM Dissolved** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of Aroclor PCB Results Affected** |
| Non-compliant surrogate recovery | Overall Accuracy/Bias | 36 | 2 | 18 | 50.0 |

### Organochlorine Pesticides

The Phase I CSO/SWO Investigation HSM dissolved Organochlorine Pesticide dataset is comprised of four samples with 112 associated results.

No major data quality issues were identified during validation of the Phase I CSO/SWO Investigation Organochlorine Pesticide analyses.

Six minor data quality issues were identified in the Phase I CSO/SWO Investigation HSM dissolved Organochlorine Pesticide dataset. The identified minor data quality issues are described in the table below.

| **Minor Data Quality Issues** | | | | | |
|---|---|---|---|---|---|
| **Organochlorine Pesticides HSM Dissolved** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of Organochlorine Pesticide Results Affected** |
| Field blank contamination | Accuracy/Bias Contamination | 112 | 4 | 32 | 28.6 |
| Non-compliant qualitative requirements | Overall Accuracy/Bias | 112 | 1 | 1 | 0.89 |
| Non-compliant matrix spike/matrix spike duplicate relative percent difference | Precision | 112 | 2 | 6 | 5.4 |
| Non-compliant internal standards | Overall Accuracy/Bias | 112 | 4 | 103 | 92.0 |
| Non-complaint project specific labeled analog recovery as specified by USEPA Region 2 | Overall Accuracy/Bias | 112 | 4 | 20 | 17.9 |
| Non-compliant field duplicate relative percent difference | Precision | 112 | 4 | 10 | 8.9 |

**Semivolatile Organic Compounds - Select Ion Monitoring**

The Phase I CSO/SWO Investigation HSM dissolved SVOCs-SIM datas et is comprised of four samples with 120 associated results.

No major data quality issues were identified during validation of the Phase I CSO/SWO Investigation SVOC SIM analyses.

Six minor data quality issues were identified in the Phase I CSO/SWO Investigation HSM dissolved SVOCs SIM dataset. The identified minor data quality issues are described in the table below.

| **Minor Data Quality Issues** | | | | | |
|---|---|---|---|---|---|
| **Semivolatiles SIM HSM Dissolved** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of SVOC SIM Results Affected** |
| Non-compliant holding time | Representativeness | 120 | 2 | 60 | 50.0 |
| Method blank contamination | Accuracy/Bias Contamination | 120 | 2 | 3 | 2.5 |
| Field blank contamination | Accuracy/Bias Contamination | 120 | 4 | 35 | 29.2 |
| Non-compliant initial calibration relative standard deviation | Overall Accuracy/Bias | 120 | 2 | 2 | 1.7 |
| Non-compliant project specific surrogate recovery as specified by USEPA Region 2 | Overall Accuracy/Bias | 120 | 1 | 16 | 13.3 |
| Non-compliant field duplicate relative percent difference | Precision | 120 | 2 | 4 | 3.3 |

**Cyanide**

The Phase I CSO/SWO Investigation HSM dissolved Cyanide dataset is comprised of four samples with four associated results.

No major data quality issues were identified during validation of the Phase I CSO/SWO Investigation Cyanide analyses.

One minor data quality issue was identified in the Phase I CSO/SWO Investigation HSM dissolved Cyanide dataset. The identified minor data quality issues, and is described in the table below.

| **Minor Data Quality Issues** | | | | | |
|---|---|---|---|---|---|
| **Cyanide HSM Dissolved** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of Cyanide Results Affected** |
| Non-compliant field duplicate relative percent difference | Precision | 4 | 2 | 2 | 50.0 |

**Polychlorinated Dibenzo-p-dioxins / Polychlorinated Dibenzofurans**

The Phase I CSO/SWO Investigation HSM dissolved PCDD/PCDFs data set is comprised of six samples with 102 associated results.

No major data quality issues were identified during validation of the Phase I CSO/SWO Investigation PCDD/PCDFs analyses.

Five minor data quality issues were identified in the Phase I CSO/SWO Investigation HSM dissolved PCDD/PCDF dataset. The identified minor data quality issues are described in the table below.

| **Minor Data Quality Issues** | | | | | |
|---|---|---|---|---|---|
| **PCDD/PCDFs HSM Dissolved** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of PCDD/PCDF Results Affected** |
| Field blank contamination | Accuracy/Bias Contamination | 102 | 2 | 9 | 8.8 |
| Non-compliant matrix spike/matrix spike duplicate recovery | Overall Accuracy/Bias | 102 | 2 | 2 | 2.0 |
| Non-compliant matrix spike/matrix spike duplicate relative percent difference | Precision | 102 | 1 | 1 | 0.98 |
| Non-complaint project specific labeled analog recovery as specified by USEPA Region 2 | Overall Accuracy/Bias | 102 | 6 | 41 | 40.2 |
| Non-compliant field duplicate relative percent difference | Precision | 102 | 4 | 12 | 11.8 |

**Polychlorinated Biphenyl Congeners**

The Phase I CSO/SWO Investigation HSM dissolved PCB Congener da taset is comprised of six samples with 1,008 associated results.

No major data quality issues were identified during validationof the Phase I CSO/SWO Investigation PCB Congener analyses.

Four minor data quality issues were identified in the Phase I CSO/SWO Investigation HSM dissolved PCB Congener dataset. The identified minor data quality issues are described in the table below.

| Minor Data Quality Issues | | | | | |
|---|---|---|---|---|---|
| **PCB Congeners HSM Dissolved** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of PCB Congener Results Affected** |
| Method blank contamination | Accuracy/Bias Contamination | 1,008 | 2 | 2 | 0.20 |
| Field blank contamination | Accuracy/Bias Contamination | 1,008 | 6 | 305 | 30.3 |
| Non-compliant internal standards | Overall Accuracy/Bias | 1,008 | 6 | 400 | 39.7 |
| Non-complaint project specific labeled analog recovery as specified by USEPA Region 2 | Overall Accuracy/Bias | 1,008 | 4 | 72 | 7.1 |

**Chlorinated Herbicides**

The Phase I CSO/SWO Investigati on HSM dissolved Chlorinated Her bicide dataset is comprised of six samples with 24 associated results.

No major data quality issues were identified during validation of the Phase I CSO/SWO Investigation Chlorinated Herbicides analyses.

Three minor data quality issues were identified in the Phase I CSO/SWO Investigation HSM dissolved Chlorinated Herbicide dataset. The identified minor data quality issues are described in the table below.

| Minor Data Quality Issues | | | | | |
|---|---|---|---|---|---|
| **Chlorinated Herbicide HSM Dissolved** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of Chlorinated Herbicide Results Affected** |
| Method blank contamination | Accuracy/Bias Contamination | 24 | 1 | 1 | 4.2 |
| Field blank contamination | Accuracy/Bias Contamination | 24 | 2 | 7 | 29.2 |
| Non-compliant continuing calibration percent difference | Overall Accuracy/Bias | 24 | 6 | 13 | 54.2 |

**Total Organic Carbon**

The Phase I CSO/SWO Investigation HSM dissolved TOC dataset is comprised of four samples with four associated results.

No major data quality issues were identified during validation of the Phase I CSO/SWO Investigation TOC analyses.

One minor data quality issue was identified in the Phase I CSO/ SWO Investigation HSM dissolved TOC dataset. The identified minor data quality issue is described in the table below.

| Minor Data Quality Issues | | | | | |
|---|---|---|---|---|---|
| **TOC HSM Dissolved** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of TOC Results Affected** |
| Field blank contamination | Accuracy/Bias Contamination | 4 | 2 | 2 | 50.0 |

**Total Extractable Petroleum Hydrocarbons**

The Phase I CSO/SWO Investigation HSM dissolved TEPH dataset is comprised of four samples with four associated results.

No major data quality issues were identified during validation of the CSO/SWO Investigation TEPH analyses.

Three minor data quality issues were identified in the Phase I CSO/SWO Investigation HSM dissolved TEPH dataset. The identified minor data quality issues are described in the table below.

| Minor Data Quality Issues | | | | | |
|---|---|---|---|---|---|
| **TEPH HSM Dissolved** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of TEPH Results Affected** |
| Field blank contamination | Accuracy/Bias Contamination | 4 | 2 | 2 | 50.0 |
| Non-compliant initial calibration relative standard deviation | Overall Accuracy/Bias | 4 | 2 | 2 | 50.0 |
| Non-compliant continuing calibration percent difference | Overall Accuracy/Bias | 4 | 2 | 2 | 50.0 |

**Total Suspended Solids**

The Phase I CSO/SWO Investigation HSM dissolved TSS dataset iscomprised of eight samples with eight associated results.

No major data quality issues were identified during validationof the Phase I CSO/SWO Investigation TSS analyses.

Two minor data quality issues were identified in the Phase I CSO/SWO Investigation HSM dissolved TSS dataset. The identified minor data quality issues are described in the table below.

| Minor Data Quality Issues | | | | | |
|---|---|---|---|---|---|
| **TSS HSM Dissolved** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of TSS Results Affected** |
| Field blank contamination | Accuracy/Bias Contamination | 8 | 2 | 2 | 25.0 |
| Non-compliant field duplicate relative percent difference | Precision | 8 | 4 | 4 | 50.0 |

**Total Dissolved Solids**

The Phase I CSO/SWO Investigation HSM dissolved TDS dataset iscomprised of eight samples with eight associated results.

No major data quality issues were identified during validationof the Phase I CSO/SWO Investigation TDS analyses.

One minor data quality issue was identified in the Phase I CSO/ SWO Investigation HSM dissolved TDS dataset. The identified minor data quality issue is describedin the table below.

| Minor Data Quality Issues | | | | | |
|---|---|---|---|---|---|
| **TDS HSM Dissolved** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of TDS Results Affected** |
| Field blank contamination | Accuracy/Bias Contamination | 8 | 2 | 2 | 25.0 |

**High Solids Mass Particulate**

**Semivolatile Organic Compounds**

The Phase I CSO/SWO Investigation HSM particulate SVOC dataset is comprised of four samples with 200 associated results.

One major data quality issue was identified during validation of the Phase I CSO/SWO Investigation HSM particulate SVOC analyses. The internal standard perylene-d12 exhibited recoveries below the quality control limit for samples PR1CSOCLYHP-01B and PR1HPDUP-01B associated with di-n-octylphthalate.

The identified major data quality issue is described in the table below.

| **Major Data Quality Issues** | | | | | |
|---|---|---|---|---|---|
| **Semivolatiles HSM Particulate** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of SVOC Results Affected** |
| Extremely poor internal standard recovery | Overall Accuracy/Bias | 200 | 2 | 2 | 1.0 |

Eight minor data quality issues were identified in the Phase I CSO/SWO Investigation HSM particulate SVOC dataset. The identified minor data quality issues are described in the table below.

| **Minor Data Quality Issues** | | | | | |
|---|---|---|---|---|---|
| **Semivolatiles HSM Particulate** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of SVOC Results Affected** |
| Non-compliant holding time | Representativeness | 200 | 2 | 2 | 1.0 |
| Field blank contamination | Accuracy/Bias Contamination | 200 | 1 | 2 | 1.0 |
| Non-compliant continuing calibration percent difference | Overall Accuracy/Bias | 200 | 4 | 12 | 6.0 |
| Non-compliant internal standard recovery | Overall Accuracy/Bias | 200 | 2 | 2 | 1.0 |
| Non-compliant method surrogate recovery | Overall Accuracy/Bias | 200 | 3 | 9 | 4.5 |
| Non-complaint project specific surrogate recovery as specified by USEPA Region 2 | Overall Accuracy/Bias | 200 | 4 | 12 | 6.0 |
| Percent moisture between 50-90% | Overall Accuracy/Bias | 200 | 4 | 200 | 100 |
| Non-compliant linear range exceedance | Overall Accuracy/Bias | 200 | 1 | 2 | 1.0 |

**Volatile Organic Compounds**

The Phase I CSO/SWO Investigation HSM particulate VOC dataset is comprised of seven samples with 42 associated results.

One major data quality issue was identified during validation of the Phase I CSO/SWO Investigation HSM dissolved VOC analyses. The internal standards chlorobenzene-d5 and 1,4-dichlorobenzene-d4 exhibited recoveries below the quality control limit. The following samples and results are associated with these non-compliant internal standard recoveries:

| Sample Number | Compound Affected |
|---|---|
| PR1CSOCLYHP-01B | 1,3-Dichlorobenzene |
| | 1,2-Dichlorobenzene |
| | 1,2,4-Trichlorobenzene |
| | 1,2,3-Trichlorobenzene |
| PR1HPDUP-01B | 1,3-Dichlorobenzene |
| | 1,2-Dichlorobenzene |
| | 1,2,4-Trichlorobenzene |
| | 1,2,3-Trichlorobenzene |
| PR1CSOCLYHP-01B-DEB | 1,3-Dichlorobenzene |
| | 1,2-Dichlorobenzene |
| | 1,2,4-Trichlorobenzene |
| | 1,2,3-Trichlorobenzene |
| PR1CSOCLYHP-02A1 | 1,3-Dichlorobenzene |
| | 1,2-Dichlorobenzene |
| | 1,2,4-Trichlorobenzene |
| | 1,2,3-Trichlorobenzene |
| PR1CSOCLYHP-02A2 | Chlorobenzene |
| | 1,3-Dichlorobenzene |
| | 1,2-Dichlorobenzene |
| | 1,2,4-Trichlorobenzene |
| | 1,2,3-Trichlorobenzene |
| PR1HPDUP-02A2 | 1,3-Dichlorobenzene |
| | 1,2-Dichlorobenzene |
| | 1,2,4-Trichlorobenzene |
| | 1,2,3-Trichlorobenzene |

The identified major data quality issue is described in the table below.

| **Major Data Quality Issues** | | | | | |
|---|---|---|---|---|---|
| **Volatiles HSM Particulate** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of VOC Results Affected** |
| Extremely poor internal standard recovery | Overall Accuracy/Bias | 42 | 6 | 25 | 59.5 |

Six minor data quality issues were identified in the Phase I CSO/SWO Investigation HSM particulate VOC dataset. The identified minor data quality issues are described in the table below.

| Minor Data Quality Issues | | | | | |
|---|---|---|---|---|---|
| **Volatiles HSM Particulate** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of VOC Results Affected** |
| Method blank contamination | Accuracy/Bias Contamination | 42 | 5 | 7 | 16.7 |
| Non-compliant internal standard recovery | Overall Accuracy/Bias | 42 | 6 | 10 | 23.8 |
| Non-compliant surrogate recovery | Overall Accuracy/Bias | 42 | 1 | 6 | 14.3 |
| Non-compliant matrix spike/matrix spike duplicate recovery | Overall Accuracy/Bias | 42 | 2 | 4 | 9.5 |
| Non-compliant matrix spike/matrix spike duplicate relative percent difference | Precision | 42 | 2 | 6 | 14.3 |
| Percent moisture between 50-90% | Overall Accuracy/Bias | 42 | 7 | 42 | 100 |

**Aroclor Polychlorinated Biphenyls (PCBs)**

The Phase I CSO/SWO Investigation HSM particulate Aroclor PCB dataset is comprised of four samples with 36 associated results.

No major data quality issues were identified during validation of the Phase I CSO/SWO Investigation Aroclor PCB analyses.

Two minor data quality issues were identified in the Phase I CSO/SWO Investigation HSM particulate Aroclor PCB dataset. The identified minor data quality issues are described in the table below.

| Minor Data Quality Issues | | | | | |
|---|---|---|---|---|---|
| **Aroclor PCBs HSM Particulate** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of Aroclor PCB Results Affected** |
| Non-compliant column percent difference | Overall Accuracy/Bias | 36 | 4 | 6 | 16.7 |
| Percent moisture between 50-90% | Overall Accuracy/Bias | 36 | 4 | 36 | 100 |

**Organochlorine Pesticides**

The Phase I CSO/SWO Investigation HSM particulate Organochlorine Pesticide dataset is comprised of four samples with 112 associated results.

One major data quality issue was identified during validation of the Phase I CSO/SWO Investigation HSM dissolved Organochlorine Pesticide analyses. The labeled analog method recoveries for 13C6-Hexachlorobenzene, 13C6-alpha-BHC, 13C6-Lindane (gamma BHC), 13C6-beta-BHC, 13C12-2,4'-DDD, 13C6-delta-BHC and/or 13C12-4,4'-DDT exhibited recoveries below the quality control limit. Two samples and six results are associated with these non-compliant labeled analog method recoveries. The following samples and results are associated with these non-compliant internal standard recoveries:

| Sample Number | Compound Affected |
|---|---|
| PR1CSOCLYHP-01B | 4,4'Methoxychlor |
| | Mirex |
| | Endrin Aldehyde |
| | Endrin Keytone |
| PR1HPDUP-01B | 4,4'Methoxychlor |
| | Endrin Aldehyde |

The identified major data quality issue is described in the table below.

| **Major Data Quality Issues** | | | | | |
|---|---|---|---|---|---|
| **Organochlorine Pesticides HSM Particulate** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of Organochlorine Pesticide Results Affected** |
| Extremely poor labeled analog method recoveries | Overall Accuracy/Bias | 112 | 2 | 6 | 5.4 |

Twelve minor data quality issues were identified in the Phase I CSO/SWO Investigation HSM particulate Organochlorine Pesticide dataset. The identified minor data quality issues are described in the table below.

| **Minor Data Quality Issues** | | | | | |
|---|---|---|---|---|---|
| **Organochlorine Pesticides HSM Particulate** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of Organochlorine Pesticide Results Affected** |
| Non-compliant holding time | Representativeness | 112 | 2 | 56 | 50.0 |
| Field blank contamination | Accuracy/Bias Contamination | 112 | 4 | 20 | 17.9 |
| Method blank contamination | Accuracy/Bias Contamination | 112 | 2 | 2 | 1.8 |
| Non-compliant internal standard recovery | Overall Accuracy/Bias | 112 | 4 | 97 | 86.6 |
| Non-compliant matrix spike/matrix spike duplicate recovery | Overall Accuracy/Bias | 112 | 1 | 2 | 1.8 |
| Non-compliant matrix spike/matrix spike duplicate relative percent difference | Precision | 112 | 1 | 5 | 4.46 |
| Non-compliant method labeled analog recovery | Overall Accuracy/Bias | 112 | 4 | 8 | 7.1 |

| | | | | | |
|---|---|---|---|---|---|
| Non-complaint project specific labeled analog recovery as specified by USEPA Region 2 | Overall Accuracy/Bias | 112 | 4 | 44 | 39.3 |
| Non-compliant qualitative requirements | Overall Accuracy/Bias | 112 | 2 | 2 | 1.8 |
| Non-compliant linear range exceedance | Overall Accuracy/Bias | 112 | 2 | 4 | 3.6 |
| Percent moisture between 50-90% | Overall Accuracy/Bias | 112 | 4 | 112 | 100 |
| Non-compliant field duplicate relative percent difference | Precision | 112 | 4 | 34 | 30.4 |

**Semivolatile Organic Compounds - Select Ion Monitoring**

The Phase I CSO/SWO Investigation HSM particulate SVOCs SIM dat aset is comprised of four samples with 120 associated results.

No major data quality issues were identified during validation of the Phase I CSO/SWO Investigation SVOCs SIM analyses.

Five minor data quality issues were identified in the Phase I C SO/SWO Investigation HSM particulate SVOCs SIM dataset. The identified minor data quality issues are described in the table below.

| **Minor Data Quality Issues** | | | | | |
|---|---|---|---|---|---|
| **Semivolatiles SIM HSM Particulate** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of SVOC SIM Results Affected** |
| Non-compliant holding time | Representativeness | 120 | 2 | 60 | 50.0 |
| Field blank contamination | Accuracy/Bias Contamination | 120 | 2 | 8 | 6.7 |
| Non-compliant initial calibration relative standard deviation | Overall Accuracy/Bias | 120 | 2 | 2 | 1.7 |
| Percent moisture between 50-90% | Overall Accuracy/Bias | 120 | 4 | 120 | 100 |
| Non-compliant field duplicate relative percent difference | Precision | 120 | 4 | 12 | 10.0 |

**Cyanide**

The Phase I CSO/SWO Investigation HSM particulate Cyanide dataset is comprised of four samples with four associated results.

No major data quality issues were identified during validation of the Phase I CSO/SWO Investigation Cyanide analyses.

Three minor data quality issues were identified in the Phase I CSO/SWO Investigation HSM particulate Cyanide dataset. The identified minor data quality issues are described in the table below.

| **Minor Data Quality Issues** | | | | | |
|---|---|---|---|---|---|
| **Cyanide HSM Particulate** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of Cyanide Results Affected** |
| Field blank contamination | Accuracy/Bias Contamination | 4 | 3 | 3 | 75.0 |
| Non-compliant matrix spike/matrix spike duplicate recovery | Overall Accuracy/Bias | 4 | 1 | 1 | 25.0 |
| Percent moisture between 50-90% | Overall Accuracy/Bias | 4 | 4 | 4 | 100 |

**Polychlorinated Dibenzo-p-dioxins / Polychlorinated Dibenzofurans**

The Phase I CSO/SWO Investigation HSM particulate PCDD/PCDFs dataset is comprised of six samples with 102 associated results.

No major data quality issues were identified during validation of the Phase I CSO/SWO Investigation PCDD/PCDFs analyses.

Four minor data quality issues were identified in the Phase I CSO/SWO Investigation HSM particulate PCDD/PCDFs dataset. The identified minor data quality issues are described in the table below.

| **Minor Data Quality Issues** | | | | | |
|---|---|---|---|---|---|
| **PCDD/PCDFs HSM Particulate** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of PCDD/PCDF Results Affected** |
| Field blank contamination | Accuracy/Bias Contamination | 102 | 3 | 5 | 4.9 |
| Non-compliant internal standard recovery | Overall Accuracy/Bias | 102 | 2 | 20 | 19.6 |
| Percent moisture between 50-90% | Overall Accuracy/Bias | 102 | 4 | 68 | 66.7 |
| Non-compliant field duplicate relative percent difference | Precision | 102 | 2 | 4 | 3.9 |

**Polychlorinated Biphenyl Congeners**

The Phase I CSO/SWO Investigation HSM particulate PCB Congener dataset is comprised of six samples with 1,008 associated results.

No major data quality issues were identified during validation of the Phase I CSO/SWO Investigation PCB Congeners analyses.

Eight minor data quality issues were identified in the Phase I CSO/SWO Investigation HSM particulate PCB Congener dataset. The identified minor data quality issues are described in the table below.

| Minor Data Quality Issues | | | | | |
|---|---|---|---|---|---|
| **PCB Congeners HSM Particulate** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of PCB Congener Results Affected** |
| Method blank contamination | Accuracy/Bias Contamination | 1,008 | 4 | 10 | 0.99 |
| Field blank contamination | Accuracy/Bias Contamination | 1,008 | 3 | 22 | 2.2 |
| Non-compliant matrix spike/matrix spike duplicate relative percent difference | Precision | 1,008 | 1 | 1 | 0.10 |
| Non-compliant internal standard recovery | Overall Accuracy/Bias | 1,008 | 5 | 413 | 41.0 |
| Non-compliant method labeled analog recovery | Overall Accuracy/Bias | 1,008 | 1 | 1 | 0.10 |
| Non-complaint project specific labeled analog recovery as specified by USEPA Region 2 | Overall Accuracy/Bias | 1,008 | 5 | 49 | 4.9 |
| Percent moisture between 50-90% | Overall Accuracy/Bias | 1,008 | 4 | 672 | 66.7 |
| Non-compliant field duplicate relative percent difference | Precision | 1,008 | 4 | 40 | 4.0 |

**Chlorinated Herbicides**

The Phase I CSO/SWO Investigation HSM particulate Chlorinated H erbicide dataset is comprised of six samples with 24 associated results.

No major data quality issues were identified during validation of the Phase I CSO/SWO Investigation Chlorinated Herbicides analyses.

Eight minor data quality issues were identified in the Phase I CSO/SWO Investigation HSM particulate Chlorinated Herbicide dataset. The identified minor data quality issues are described in the table below.

| Minor Data Quality Issues | | | | | |
|---|---|---|---|---|---|
| **Chlorinated Herbicide HSM Particulate** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of Chlorinated Herbicide Results Affected** |
| Method blank contamination | Accuracy/Bias Contamination | 24 | 3 | 4 | 16.7 |
| Field blank contamination | Accuracy/Bias Contamination | 24 | 6 | 10 | 42.0 |

| | | | | | |
|---|---|---|---|---|---|
| Non-compliant matrix spike/matrix spike duplicate recovery | Overall Accuracy/Bias | 24 | 3 | 11 | 45.8 |
| Non-compliant matrix spike/matrix spike duplicate relative percent difference | Precision | 24 | 3 | 7 | 29.2 |
| Non-compliant surrogate recovery | Overall Accuracy/Bias | 24 | 1 | 4 | 16.7 |
| Non-compliant laboratory control standard recovery | Overall Accuracy/Bias | 24 | 2 | 4 | 16.7 |
| Non-compliant column percent difference | Overall Accuracy/Bias | 24 | 4 | 10 | 41.7 |
| Percent moisture between 50-90% | Overall Accuracy/Bias | 24 | 6 | 24 | 100 |

**Total Organic Carbon**

The Phase I CSO/SWO Investigation HSM particulate TOC dataset i s comprised of six samples with six associated results.

No major data quality issues were identified during validation of the Phase I CSO/SWO Investigation TOC analyses.

One minor data quality issue was identified in the Phase I CSO/SWO Investigation HSM particulate TOC dataset. The identified minor data quality issue is described in the table below.

| **Minor Data Quality Issues** | | | | | |
|---|---|---|---|---|---|
| **TOC HSM Particulate** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of TOC Results Affected** |
| Percent moisture between 50-90% | Overall Accuracy/Bias | 6 | 6 | 6 | 100 |

**Total Petroleum Hydrocarbons**

The Phase I CSO/SWO Investigation HSM particulate TEPH dataset is comprised of four samples with four associated results.

No major data quality issues were identified during validation of the Phase I CSO/SWO Investigation TEPH analyses.

Five minor data quality issue was identified in the Phase I CSO/SWO Investigation HSM particulate TEPH dataset. The identified minor data quality issues are described in the table below.

| Minor Data Quality Issues | | | | | |
|---|---|---|---|---|---|
| **TEPH HSM Particulate** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of TEPH Results Affected** |
| Non-compliant holding time | Representativeness | 4 | 2 | 2 | 50.0 |
| Non-compliant initial calibration relative standard deviation | Overall Accuracy/Bias | 4 | 2 | 2 | 50.0 |
| Non-compliant continuing calibration percent difference | Overall Accuracy/Bias | 4 | 2 | 2 | 50.0 |
| Percent moisture between 50-90% | Overall Accuracy/Bias | 4 | 4 | 4 | 100 |
| Non-compliant field duplicate relative percent difference | Precision | 4 | 2 | 2 | 50.0 |

### 4.1.7 Grab Water Samples Systematic Data Quality Issues

No systematic data quality issues were identified during the Ph ase I CSO/SWO Investigation data grab water sample validation task.

### 4.1.8 Grab Water Samples Systematic and Random Data Quality Issues by Analytical Group

**Grab Water**

**Metals**

The Phase I CSO/SWO Investigation grab water sample Metals dataset is comprised of four samples with 92 associated results.

No major data quality issues were identified during validation of the Phase I CSO/SWO Investigation Metals analyses.

Two minor data quality issues were identified in the Phase I CS O/SWO Investigation grab water Metals dataset. The identified minor data quality issues are described in the table below.

| Minor Data Quality Issues | | | | | |
|---|---|---|---|---|---|
| **Metals Grab Water** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of Metals Results Affected** |
| Continuing calibration blank contamination | Accuracy/Bias Contamination | 92 | 2 | 6 | 6.5 |
| Non-compliant field duplicate relative percent difference | Precision | 92 | 2 | 8 | 8.7 |

**Mercury**

The Phase I CSO/SWO Investigation grab water sample Mercury dataset is comprised of four samples with four associated results.

No major or minor data quality issues were identified during validation of the Phase I CSO/SWO Investigation Mercury analyses.

**Methyl Mercury**

The Phase I CSO/SWO Investigation grab water sample Methyl Mercury dataset is comprised of four samples with four associated results.

No major or minor data quality issues were identified during validation of the Phase I CSO/SWO Investigation Methyl Mercury analyses.

**Total Suspended Solids**

The Phase I CSO/SWO Investigation grab water sample TSS dataset is comprised of 45 samples with 45 associated results.

No major data quality issues were identified during validation of the Phase I CSO/SWO Investigation TSS analyses.

One minor data quality issue was identified in the Phase I CSO/SWO Investigation grab water TSS dataset. The identified minor data quality issue is described in the table below.

| Minor Data Quality Issues | | | | | |
|---|---|---|---|---|---|
| **TSS Grab Water** | **Data Quality Parameter Affected** | **Total Number of Results Reported** | **Number of Samples Affected** | **Number of Results Affected** | **% of TSS Results Affected** |
| Non-compliant holding time | Representativeness | 45 | 8 | 8 | 17.8 |

**Total Dissolved Solids**

The Phase I CSO/SWO Investigation grab water sample TDS dataset is comprised of 45 samples with 45 associated results.

No major data quality issues were identified during validation of the Phase I CSO/SWO Investigation TDS analyses.

One minor data quality issue was identified in the Phase I CSO/SWO Investigation grab water TDS dataset. The identified minor data quality issue is described in the table below.

| Minor Data Quality Issues | | | | | |
|---|---|---|---|---|---|
| TDS<br>Grab Water | Data Quality Parameter Affected | Total Number of Results Reported | Number of Samples Affected | Number of Results Affected | % of TDS Results Affected |
| Non-compliant holding time | Representativeness | 45 | 8 | 8 | 17.8 |

## Grab Water Dissolved

## Metals

The Phase I CSO/SWO Investigation grab water dissolved sample Metals dataset is comprised of four samples with 92 associated results.

No major data quality issues were identified during validation of the Phase I CSO/SWO Investigation Metals analyses.

Three minor data quality issues were identified in the Phase I CSO/SWO Investigation dissolved grab water Metals dataset. The identified minor data quality issues are described in the table below.

| Minor Data Quality Issues | | | | | |
|---|---|---|---|---|---|
| Metals<br>Grab Water Dissolved | Data Quality Parameter Affected | Total Number of Results Reported | Number of Samples Affected | Number of Results Affected | % of Metals Results Affected |
| Field blank contamination | Accuracy/Bias Contamination | 92 | 4 | 8 | 8.7 |
| Continuing calibration blank contamination | Accuracy/Bias Contamination | 92 | 4 | 9 | 9.8 |
| Non-compliant field duplicate relative percent difference | Precision | 92 | 2 | 2 | 2.2 |

### Mercury

The Phase I CSO/SWO Investigation grab water dissolved sample Mercury dataset is comprised of four samples with four associated results.

No major or minor data quality issues were identified during validation of the Phase I CSO/SWO Investigation Mercury analyses.

### Methyl Mercury

The Phase I CSO/SWO Investigation grab water dissolved sample Methyl Mercury dataset is comprised of four samples with four associated results.

No major or minor data quality issues were identified during validation of the Phase I CSO/SWO Investigation Methyl Mercury analyses.

## 5. Total Tetrachlorinated Dibenzo-p-dioxin Verification

This verification procedure was implemented as an evaluation of Total Tetrachlorinated Dibenzo-p-Dioxin (TCDD) results since these values were not evaluated during the isomer specific data validation task. This process is used to assess both the completeness and accuracy of the total TCDD data set.

Total TCDD results were verified for each sample having total TCDD results reported in Phase I of the CSO/SWO Investigation. In cases where multiple analyses were performed by the laboratory for 2,3,7,8-TCDD (example: multiple dilutions due to elevated target analyte concentrations or re-analysis based on failed quality control criteria), EDS staff made certain that the total TCDD value reported in the data base, as well as hardcopy data, was based on the same analysis used to derive the 2,3,7,8-TCDD value reported.

Procedure Acceptance Criteria:

- Selected ion current profiles (SICPs) for ions 319.8965 and 321.8936 representing all non 2,3,7,8-substituted tetra chlorinated dibenzo-p-dioxins and 2,3,7,8-substituted tetra chlorinated dibenzo-p-dioxin are reported for each sample.
- Integrated areas are present for both the primary and confirmation ions for all peaks and are 2.5 times above background noise in each sample SICP.
- Instrument quantitation reports containing relative response factors for 2,3,7,8-TCDD, area counts for the 2,3,7,8 –TCDD labeled analog and sample preparation information are present for each sample.

Calculation Acceptance Criteria:

- The retention time of each non 2,3,7,8-substituted compound identified as present in the sample was within the window established by the window defining mixture, for the tetra chlorinated homologue.
- The integrated ion current of each non 2,3,7,8-substituted compound identified as present in the sample was at least 2.5 times background noise.
- All peaks meeting the requirements described above were included in the laboratory's calculation of Total TCDD.
- A minimum of one non 2,3,7,8-substituted compound identified was verified and the concentration recalculated.
- Recalculate the sum of all non 2,3,7,8-substituted tetra chlorinated dibenzo-p-dioxins and 2,3,7,8-substituted tetra chlorinated dibenzo-p-dioxin identified in each sample.

Results of Verification:

All 53 total TCDD results, reported during implementation of the Phase I CSO/SWO Investigation, were evaluated during this task. Of the 53 samples evaluated for this program, four of the results are recommended for editing based on the results of the total TCDD result verification task. The affected samples and associated results are provided in Table 5-1 below. Total TCDD results for these samples have been corrected in both the laboratory hardcopy data reports and United States Environmental Protection Agency (USEPA) Region 2 Main Electronic Data Deliverable (MEDD).

**Table 5-1**

| Sample Identification | Result Units | Existing Result Value | Data Qualifiers | New Result Value | Data Qualifiers |
|---|---|---|---|---|---|
| PR1LPDUP-01A | pg/g | 11.5 | EMPC | 9.72 | EMPC |
| PR1CSOCLYHP-02B | pg/g | 14.0 | | 12.8 | |
| PR1HPDUP-02B | pg/g | 13.8 | EMPC | 12.1 | EMPC |
| PR1CSOCLYHP-01C | pg/g | 19.4 | EMPC | 17.8 | EMPC |

## 6. Conclusions

The data usability evaluations outlined in this report provides details regarding the relationship of data quality issues to associated samples and sample results. Ninety-nine percent of the data validated and reported are suitable for their intended use. A total of 29 sample results for the SVOC analyses and 25 sample results for the VOC analyses were rejected due to internal standard recoveries. A total of seven sample results for the organochlorine pesticide analyses were rejected due to method labeled analog recoveries. Sample results that were rejected are not suitable for project use. Sample results that are qualified as estimated due to multiple minor data quality issues as detailed in this report are suitable for project use. The achievement of the completeness goals for number of samples collected and the number of samples accepted for use provides sufficient quality data to support project decisions.

## 7. References

Tierra 2013. Combined Sewer Overflow/Stormwater Outfall Investigation Quality Assurance Project Plan, Revision 3, September.

**Attachment 1**

Phase I Report Addendum – Additional Data Evaluation

# Combined Sewer Overflow/Stormwater Outfall Investigation

# Phase I Report Addendum – Additional Data Evaluation

**Tierra Solutions, Inc.**

**East Brunswick, New Jersey**

March 2016

Revision 0

## Appendices

## 1. Introduction

This Phase I Report Addendum – Additional Data Evaluation (Phase I Report Addendum) has been developed by Tierra Solutions, Inc. (Tierra), on behalf of Occidental Chemical Corporation, the successor to Diamond Shamrock Chemicals Company (formerly known as Diamond Alkali Company). Tierra prepared the Phase I Evaluation/Recommendation Report (Phase I Report, Revision 0; Tierra 2014) to document the data evaluation completed as part of Phase I of the combined sewer overflow/stormwater outfall (CSO/SWO) investigation implemented under the U.S. Environmental Protection Agency- (USEPA-) approved Combined Sewer Overflow/Stormwater Outfall Investigation Quality Assurance Project Plan (CSO/SWO Investigation QAPP; Tierra 2013). In response to USEPA comments (specifically, Comment No. 3), dated August 6, 2015 on the Phase I Report (Revision 0; Tierra 2014), Tierra conducted additional evaluations of the Phase I CSO sampling results/data. These additional data evaluations were beyond the scope of the data evaluation criteria defined in the CSO/SWO Investigation QAPP (Tierra 2013).

The Phase I data evaluation was conducted on an analytical group basis, for each sampling method, and was designed to identify the most sensitive sampling method by comparing the number of detections of target analytes within a given analytical group. However, in order to address USEPA comment No. 3, Tierra conducted additional data evaluations by tabulating the results from the high solids mass (HSM), low solids mass (LSM), and whole water datasets in terms of both concentration and frequency of detections, developing summary statistics, and reviewing the results for trends to determine if any new insights could be gathered to help in the planning for Phase II of the CSO/SWO program. The additional data evaluations consisted of side-by-side comparisons of the HSM and LSM particulate phases, dissolved-phases, total concentrations, and whole water total concentrations detected in the samples collected during Phase I. This Phase I Report Addendum documents the additional data evaluation methods, summary statistics, and results associated with Phase I of the CSO/SWO investigation.

Preliminary results of the additional data evaluations and summary statistics (for select analytical groups) were presented to the USEPA in a meeting on November 17, 2015, and this Phase I Report Addendum provides the results of the additional data evaluations as requested by the USEPA. Additional data evaluations were completed for the following analytical groups:

- Polychlorinated dibenzo-p-dioxins/polychlorinated dibenzofurans (PCDDs/PCDFs)
- Polychlorinated biphenyl (PCB) congeners
- PCB Aroclors
- Organochlorine pesticides (OCPs)

- Semivolatile organic compounds (SVOCs)
- SVOC selective ion monitoring (SIM)
- Chlorinated herbicides
- Cyanide (CN)
- Volatile organic compounds (VOCs)
- Total extractable petroleum hydrocarbons (TEPH)

### 1.1 Additional Data Evaluation Process

The additional data evaluations performed by Tierra included detailed statistical analyses to compare the frequency of detections and differences in concentrations between each sampling method used in Phase I (HSM, LSM, and whole water). Specific details of the evaluations performed include the following:

- <u>Comparison of the frequency of detections</u>
  - Between the whole water sampling method and HSM total and LSM total sampling methods. HSM total and LSM total were estimated as the sum of the HSM or LSM particulate concentration (e.g., micrograms per kilogram [µg/kg]) and the corresponding dissolved-phase concentration (e.g., micrograms per liter [µg/L]). Additional details on HSM and LSM total calculation and unit conversion are provided in Section 1.1.1.
  - Between the HSM and LSM sampling methods for both the particulate and dissolved-phases.

- <u>Comparison of constituent concentrations</u>
  - Between sampling methods for analytes detected by two or more sampling methods for whole water.
  - Between HSM (total, particulate, and dissolved-phase) and LSM (total, particulate, and dissolved-phase).

The following data evaluation rules were applied for each analytical group:

- Only positively identified analytes (results reported above the project quantitation limit [PQL]) were included in the additional data evaluation.

- Analytes reported as non-detects were assigned a zero value for both the statistical analyses, as well as for averaging primary and duplicate sample concentrations.

- Analytes identified above the method detection limit but below the PQL were assigned a zero value for both the statistical analyses, as well as for averaging primary and duplicate sample concentrations.

### 1.1.1 Unit Conversion

To perform a side-by-side comparison of the HSM and LSM particulate and dissolved-phase concentrations and whole water concentrations, the particulate results reported for the HSM particulate and LSM particulate sampling methods (e.g., µg/kg) were converted to a volumetric concentration (e.g., µg/L). Converting all sample results into consistent units (e.g., mass per volume units [µg/L]) allows direct comparison of sample concentrations between sampling methods for analytes detected by two or more sampling methods.

The following equations were used to convert HSM and LSM particulate results to volumetric concentrations:

<u>HSM Particulate</u>:

[illegible]

where:

- Particulate Contaminant Mass is the HSM particulate sample result (e.g., µg/kg) reported by the analytical laboratories on a mass per unit weight (dry weight) basis
- Total Solids Mass (wet weight) refers to the total solids sample mass collected for each event as presented in Table 2-1
- Total Liters Processed refers to the total liters of CSO overflow processed for each event as presented in Table 2-1
- Unit weight (dry and wet weight) of sediment are sample-specific weights reported by the analytical laboratories and

[illegible]

Wet weight and percent solids information was obtained for each analytical group for each event/attempt from the analytical laboratories.

LSM Particulate:

where:

- Particulate Contaminant Mass is the HSM particulate sample result (e.g., µg/kg) reported by the analytical laboratories on a mass per unit weight (dry weight) basis
- Solids Mass on Filter (dry weight) refers to the sample-specific solids mass collected on the filter during LSM filtration and is based on total suspended solids and total LSM bulk sample volume filtered
- Total LSM Bulk Volume Filtered refers to the total LSM bulk sample volume filtered (sample-specific) to generate LSM particulate (on the filter) and LSM dissolved (filtrate) samples for analysis.

Any factors needed for unit conversion were added to equations as appropriate. Additionally, the converted HSM and LSM particulate concentrations were summed with the corresponding dissolved-phase concentrations to calculate HSM total and LSM total concentrations.

#### 1.1.2 Chi-Square Test

As an additional data evaluation step, a quantitative evaluation (statistical comparison) of the number of detected compounds in total concentrations (HSM total, LSM total, and whole water) among sampling methods was conducted. This is an additional line of comparison to evaluate if the number of detections are significantly different between sampling methods. A statistical test was applied in a pairwise manner for each sampling method and event/attempt to evaluate if the number of compounds detected within an analytical group was dependent on the sampling method. The number of detects and non-detects for each sampling method within the analytical group were arranged in a two-way contingency table (Agresti 1990). The "null hypothesis" of the test is that the frequency of detects is independent of the sampling method. When the p-value of the test is less than 0.05, the null hypothesis is rejected and the assumption is that the frequency of detection is dependent upon the sampling method (i.e., indicating that the number of detects is significantly different between methods). When the frequency within all cells of the two-way contingency table exceeded 5, a Pearson chi-squared test of independence was conducted (Agresti 1990). When the frequency in any of the cells of the two-way contingency table was less than 5, a Fisher's Exact Test (Agresti 1990) was used to test independence. Results of the chi-square test for each analytical group are presented in Section 2.

## 2. Additional Data Evaluation Findings

A summary of sampling events/attempts and the analytical groups selected for additional data evaluations is summarized in Table 2-1 (below).

**Table 2-1**
**Summary of Samples Collected and Analyzed and the Volumes and Mass Associated with HSM Sampling**

| Event and Attempt | Sample Identification | Date | Total HSM Particulate Mass Collected (grams wet weight) | Total CSO Volume Processed (liters) | Analytical Group Selected for Additional Data Evaluation |
|---|---|---|---|---|---|
| **Event 1, Attempt 1** | PR1CSOCLY**-01A PR1CSOCLY**DUP-01A | 6/10/2013 | 223.35 | 13,058 | PCDDs/PCDFs, PCB congeners |
| **Event 1, Attempt 2** | PR1CSOCLY**-01B PR1CSOCLY**-DUP-01B | 7/1/2013 | 1,564 | 17,589 | PCB Aroclors, OCPs, SVOCs, SVOC SIM, chlorinated herbicides, CN, VOCs, TEPH |
| **Event 1, Attempt 3** | PR1CSOCLY**-01C PR1CSOCLY**-DUP-01C | 4/30/2014 | 1,575.73 | 14,307 | PCDDs/PCDFs, PCB congeners, chlorinated herbicides, |
| **Event 2, Attempt 1** | PR1CSOCLY**-02A PR1CSOCLY**-DUP-02A | 10/7/2013 | 219.78 | 1,457 | VOCs |
| **Event 2, Attempt 2** | PR1CSOCLY**-02B PR1CSOCLY**-DUP-02B | 12/7/2013 | 1,185.05 | 13,353 | PCDDs/PCDFs, PCB congeners, PCB Aroclors, OCPs, SVOCs, SVOC SIM, chlorinated herbicides, CN, TEPH |

**Notes:**

HSM particulate solids mass represents the total solids mass generated within the continuous flow centrifuge (CFC) during each sampling event/attempt.

Total volume of CSO processed is the total CSO volume pumped and processed through the CSO sampling system, including the CFC, LSM, and whole water sample ports during each sampling event/attempt.

** = Two-character code to indicate sample matrix (e.g., “HP” for HSM particulate, “WW” for whole water).

Results of the additional data evaluations for each analytical group is summarized below. Supporting information is presented in Appendices A through J.

### 2.1 Polychlorinated Dibenzo-*p*-Dioxins/Polychlorinated Dibenzofurans

All three sample collection and processing methods (HSM, LSM, and whole water) were evaluated for the PCDD/PCDF analytical group. Samples (primary sample and field duplicate sample) were collected for PCDD/PCDF analysis during three events: Event #1/Attempt #1, Event #1/Attempt #3, and Event #2/Attempt #2. A summary of the findings of the additional data evaluations for PCDD/PCDF data are provided below. Data evaluation summaries and analytical results are presented in Appendix A.

- The HSM sampling method resulted in a higher frequency of detects (number of detections) than other methods. The average frequency of detected congeners for the HSM sampling method over all events was: total – 77% (13 detects out 17 congeners), particulate – 77% (13 detects out of 17 congeners), and dissolved – 25% (four detects out of 17 congeners) (Table A-1).

- Where detected in both the HSM and LSM methods, the HSM total concentrations were higher (23%), on average, than the LSM total concentrations (Table A-1).

- Where detected in both the HSM and whole water methods, the HSM total concentrations were slightly lower (-10%), on average, than the whole water concentrations; however, there was great variability among events (Table A-1).

- Where detected in both the LSM and whole water methods, the LSM total concentrations were lower (-18%), on average, than the whole water concentrations (Table A-1).

- Where detected in both the HSM and LSM particulate sampling methods, the HSM particulate concentrations were lower (-48%), on average, than the LSM particulate concentrations (Table A-1).

- Where detected in both the HSM and LSM dissolved sampling methods, the HSM dissolved concentrations were significantly higher (501%), on average, than the LSM dissolved concentrations (Table A-1).

Results of the chi-square test indicated the following:

- The HSM sampling method had a significantly greater frequency of detected congeners than both of the other methods (i.e., LSM and whole water) for all events (Table A-2).

- The LSM and whole water sampling methods were similar with respect to the number of detected congeners (Table A-2).

Tables A-3 through A-7 provide the analytical results and conversions for each method and sampling event.

### 2.2 Polychlorinated Biphenyl Congeners

All three sample collection and processing methods (HSM, LSM, and whole water) were evaluated for the PCB congener analytical group. Samples (primary sample and field duplicate sample) were collected for PCB congener analysis during three events: Event #1/Attempt #1, Event #1/Attempt #3, and Event #2/Attempt #2. A summary of the findings of the additional data evaluations for PCB congener data are provided below. Data evaluation summaries and analytical results are presented in Appendix B.

- The HSM sampling method resulted in a higher frequency of detects (number of detections) than other methods. The average frequency of detected congeners for the HSM sampling method over all events was: total – 59% (99 detects out 168 congeners/coelutions), particulate – 59% (99 detects out of 168 congeners/coelutions), and dissolved – 15% (25 detects out of 168 congeners/coelutions) (Table B-1).

- Where detected in both the HSM and LSM methods, the HSM total concentrations were higher (19%), on average, than the LSM total concentrations (Table B-1).

- Where detected in both the HSM and whole water methods, the HSM total concentrations were slightly lower (-10%), on average, than the whole water concentrations; however, there is great variability among events (Table B-1).

- Where detected in both the LSM and whole water methods, the LSM total concentrations were lower (-33%), on average, than the whole water concentrations (Table B-1).

- Where detected in both the HSM and LSM particulate methods, the HSM particulate concentrations were slightly lower (-2%), on average, than the LSM particulate concentrations (Table B-1).

- Where detected in both the HSM and LSM dissolved methods, the HSM dissolved concentrations were, higher (71%), on average, than the LSM dissolved concentrations (Table B-1).

Results of the chi-square test indicated the following:

- The HSM sampling method had a higher frequency of detected congeners than both of the other methods (i.e., LSM and whole water) for all events; however, the difference for Event #1/Attempt #1 is not significant (i.e., p>0.05), with respect to the whole water method (Table B-2).

- The whole water sampling method had a higher frequency of detected congeners than the LSM method for all events (Table B-2).

Tables B-3 through B-7 provide the analytical results and conversions for each method and sampling event.

### 2.3 Polychlorinated Biphenyl Aroclors

All three sample collection and processing methods (HSM, LSM, and whole water) were evaluated for the PCB Aroclor analytical group. Samples (primary sample and field duplicate sample) were collected for PCB Aroclor analysis during two events: Event #1/Attempt #2 and Event #2/Attempt #2. A summary of the findings of the additional data evaluations for PCB Aroclor data are provided below. Data evaluation summaries and analytical results are presented in Appendix C.

- Two PCB Aroclors (Aroclor 1254 and Aroclor 1260) were identified for HSM particulate analysis; however, only Aroclor 1254 was detected above the PQL during analysis.

- Concentration comparisons were not performed between sampling methods because PCB Aroclors were positively identified (above the PQL) for only HSM particulate analysis.

Results of the chi-square test indicated the following:

- There was no significant difference in frequency of detection among methods (HSM, LSM, and whole water) according to the Fisher Exact Test (Table C-2).

Tables C-3 through C-7 provide the analytical results and conversions for each method and sampling event.

### 2.4 Organochlorine Pesticide

All three sample collection and processing methods (HSM, LSM, and whole water) were evaluated for the OCP analytical group. Samples (primary sample and field duplicate sample) were collected for OCP analysis during two events: Event #1/Attempt #2 and Event #2/Attempt #2. A summary of the findings of the additional data evaluations for OCP data are provided below. Data evaluation summaries and analytical results are presented in Appendix D.

- The HSM sampling method resulted in a higher frequency of detects (number of detections) than other methods. The average frequency of detected congeners for the HSM sampling method over all events was: total – 45% (13 detects out 28 congeners), particulate – 35% (9.8 detects out of 28 congeners), and dissolved – 35% (9.8 detects out of 28 congeners) (Table D-1).

- Where detected in both the HSM and LSM methods, the HSM total concentrations were higher (8%), on average, than the LSM total concentrations (Table D-1).

- Where detected in both the HSM and whole water methods, the HSM total concentrations were slightly lower (-5%), on average, than the whole water concentrations; however, there was great variability among events (Table D-1).

- Where detected in both the LSM and whole water methods, the LSM total concentrations were slightly lower (-7%), on average, than the whole water concentrations (Table D-1).

- Where detected in both the HSM and LSM particulate sampling methods, the HSM particulate concentrations were lower (-55%), on average, than the LSM particulate concentrations (Table D-1).

- Where detected in both the HSM and LSM dissolved sampling methods, the HSM dissolved concentrations were higher (91%), on average, than the LSM dissolved concentrations (Table D-1).

Results of the chi-square test indicated the following:

- There was no significant difference in frequency of detection among methods (HSM, LSM, and whole water) (Table D-2).

Tables D-3 through D-7 provide the analytical results and conversions for each method and sampling event.

### 2.5 Semivolatile Organic Compounds

All three sample collection and processing methods (HSM, LSM, and whole water) were evaluated for the SVOC analytical group. Samples (primary sample and field duplicate sample) were collected for SVOC analysis during two events: Event #1/Attempt #2 and Event #2/Attempt #2. A summary of the findings of the additional data evaluations for SVOC data are provided below. Data evaluation summaries and analytical results are presented in Appendix E.

- The HSM sampling method resulted in a higher frequency of detects (number of detections) than other methods. The average frequency of detected congeners for the HSM sampling method over all events was: total – 9% (4.3 detects out of 50 compounds), particulate – 5% (2.5 detects out of 50 compounds), and dissolved – 6% (2.8 detects out of 50 compounds) (Table E-1).

- Where detected in both the HSM and LSM methods, the HSM total concentrations were higher (51%), on average, than the LSM total concentrations (Table E-1).

- Where detected in both the HSM and whole water methods, the HSM total concentrations were higher (19%), on average, than the whole water concentrations (Table E-1).

- Where detected in both the LSM and whole water methods, the LSM total concentrations were lower (-33%), on average, than the whole water concentrations (Table E-1).

- Where detected in both the HSM and LSM particulate sampling methods, the HSM particulate concentrations were lower (-81%), on average, than the LSM particulate concentrations (Table E-1).

- Where detected in both the HSM and LSM dissolved methods, the HSM dissolved concentrations were higher (37%), on average, than the LSM dissolved concentrations (Table E-1).

Results of the chi-square test indicated the following:

- There was some evidence that the HSM sampling method had a greater frequency of detected SVOCs than both of the other methods (i.e., LSM and whole water) for all events; however, this apparent difference was not statistically significant (i.e., $p>0.05$) (Table E-2).

- There was no significant difference in frequency of detection between the LSM and whole water methods (Table E-2).

Tables E-3 through E-7 provide the analytical results and conversions for each method and sampling event.

### 2.6 Semivolatile Organic Compounds Selective Ion Monitoring

All three sample collection and processing methods (HSM, LSM, and whole water) were evaluated for the SVOC SIM analytical group. Samples (primary sample and field duplicate sample) were collected for SVOC SIM analysis during two events: Event #1/Attempt #2 and Event #2/Attempt #2. A summary of the findings of the additional data evaluations for SVOC SIM data are provided below. Data evaluation summaries and analytical results are presented in Appendix F.

- The HSM sampling method resulted in a higher frequency of detects (number of detections) than other methods. The average frequency of detected congeners for the HSM sampling method over all events was: total – 89% (26.8 detects out of 30 compounds), particulate – 82% (24.5 detects out of 30 compounds), and dissolved – 58% (17.5 detects out of 30 compounds) (Table F-1).

- Where detected in both the HSM and LSM methods, the HSM total concentrations were lower (-37%), on average, than the LSM total concentrations (Table F-1).

- Where detected in both the HSM and whole water methods, the HSM total concentrations were lower (-60%), on average, than the whole water concentrations (Table F-1).

- Where detected in both the LSM and whole water methods, the LSM total concentrations were lower (-27%), on average, than the whole water concentrations (Table F-1).

- Where detected in both the HSM and LSM particulate sampling methods, the HSM particulate concentrations were lower (-83%), on average, than the LSM particulate concentrations (Table F-1).

- Where detected in both the HSM and LSM dissolved sampling methods, the HSM dissolved concentrations were higher (92%), on average, than the LSM dissolved concentrations (Table F-1).

Results of the chi-square test indicated the following:

- The HSM sampling method had a greater frequency of detected SVOC SIM than both of the other methods (i.e., LSM or whole water) for all events (Table F-2).

- There was no significant difference in the frequency of detection between the LSM and whole water methods (Table F-2).

Tables F-3 through F-7 provide the analytical results and conversions for each method and sampling event.

### 2.7 Chlorinated Herbicides

All three sample collection and processing methods (HSM, LSM, and whole water) were evaluated for the chlorinated herbicides analytical group. Samples (primary sample and field duplicate sample) were collected for chlorinated herbicides analysis during three events: Event #1/Attempt #2, Event #1/Attempt #3, and Event #2/Attempt #2. A summary of the findings of the additional data evaluations for chlorinated herbicides data are provided below. Data evaluation summaries and analytical results are presented in Appendix G.

- The LSM sampling method resulted in a higher frequency of detects (number of detections) than other methods. The average frequency of detected congeners for the LSM sampling method over all events was: total – 38% (1.5 detects out of 4 compounds) and dissolved – 38% (1.5 detects out of 4 compounds) (Table G-1). No compounds were positively detected in the HSM particulate or LSM particulate sampling methods.

- Where detected in both the HSM and LSM methods, the HSM total concentrations were higher (19%), on average, than the LSM total concentrations (Table G-1).

- Where detected in both the HSM and whole water methods, the HSM total concentrations were lower (-32%), on average, than the whole water concentrations (Table G-1).
- Where detected in both the LSM and whole water methods, the LSM total concentrations were lower (-36%), on average, than the whole water concentrations (Table G-1).
- Where detected in both the HSM and LSM dissolved sampling methods, the HSM dissolved concentrations were higher (19%), on average, than the LSM dissolved concentrations (Table G-1).

Results of the chi-square test indicated the following:

- There was no significant difference in frequency of detection among methods (HSM, LSM, and whole water) (Table G-2).

Tables G-3 through G-7 provide the analytical results and conversions for each method and sampling event.

### 2.8 Cyanide

Two of the three sample collection and processing methods (HSM and whole water) were evaluated for CN. Samples (primary sample and field duplicate sample) were collected for CN analysis during two events: Event #1/Attempt #2 and Event #2/Attempt #2. A summary of the findings of the additional data evaluations for CN data are provided below. Data evaluation summaries and analytical results are presented in Appendix H.

- The frequency of detection was the same for HSM total and whole water concentrations (100%) (Table H-1).
- Where detected in both HSM and whole water sampling methods, the HSM total concentrations were lower (-43%), on average, than the whole water concentrations. However, it should be noted that total concentrations in Event #1/Attempt #2 were similar between HSM total and whole water, but whole water concentrations were of a magnitude (approximately 10 times) greater than HSM total in Event #2/Attempt #2 (Table H-1).

CN was detected in all samples that were analyzed using HSM and whole water sampling methods. Therefore, the chi-square test was not conducted for this compound. As discussed above, CN was not analyzed for LSM particulate/dissolved samples.

Tables H-2 through H-4 provide the analytical results and conversions for each method and sampling event.

### 2.9 Volatile Organic Compounds

Two of the three sample collection and processing methods (HSM and whole water) were evaluated for VOCs. VOCs were not analyzed using the LSM method due to the required filtration method that compromises sample integrity for VOCs. Samples (primary sample and field duplicate sample) were collected for VOC analysis during two events: Event #1/Attempt #2 and Event #2/Attempt #1. A summary of the findings of the additional data evaluations for VOC data are provided below. Data evaluation summaries and analytical results are presented in Appendix I.

- Chlorobenzene was positively identified (above the PQL) during HSM particulate analysis only.
- 1,4-Dichlorobenzene was positively identified during HSM particulate, HSM dissolved, and whole water analyses; however, it was only positively detected (above the PQL) during HSM particulate analysis (Table I-1).
- Concentration comparisons were not performed because VOCs were detected only for HSM particulate analysis.

Results of the chi-square test indicated the following:

- Frequency of detection was not significantly different between methods (HSM and whole water) according to the Fisher Exact Test (Table I-2). As discussed above, VOCs were not analyzed for LSM particulate/dissolved samples.

Tables I-3 through I-5 provide the analytical results and conversions for each method and sampling event.

### 2.10 Total Extractable Petroleum Hydrocarbons

Two of the three sample collection and processing methods (HSM and whole water) were evaluated for TEPH. Samples (primary sample and field duplicate sample) were collected for TEPH analysis during two events: Event #1/Attempt #2 and Event #2/Attempt #2. A summary of the findings of the additional data evaluations for TEPH data are provided below. Data evaluation summaries and analytical results are presented in Appendix J.

- The frequency of detection was the same (equal) for HSM total and whole water concentrations (100%) (Table J-1).
- Where detected in both the HSM and whole water methods, the HSM total concentrations were lower (-55%), on average, than the whole water concentrations (Table J-1).

TEPH was detected in all samples that were analyzed using the HSM and whole water sampling methods. Therefore, the chi-square test was not conducted for this compound. As discussed above, TEPH was not analyzed for LSM particulate/dissolved samples.

Tables J-2 through J-4 provide the analytical results and conversions for each method and sampling event.

## 3. Summary

This Phase I Report Addendum presents the additional data evaluations conducted for each analytical group and includes detailed statistical analyses to compare the frequency of detections and differences in concentrations between each sampling method used in Phase I (HSM, LSM, and whole water). These additional data evaluations were beyond the scope of the data evaluation criteria defined in the CSO/SWO Investigation QAPP (Tierra 2013) and the results generated by these additional data evaluations provide a more in-depth analysis of the Phase I data than provided in the Phase I Report.

The summary results presented in Section 2 show the observed differences with respect to number of detections and concentrations for each analytical group. HSM is the most sensitive sampling method with respect to the number of detections and provides the best approach for detecting target compounds present in CSO and SWO overflow. Drawing meaningful conclusions regarding the relative concentrations of target compounds observed between sampling methods is more challenging given the observed variability between sampling events/attempts and analytical groups.

# 4. References

Agresti, A. 1990. Categorical Data Analysis. John Wiley and Sons. New York.

Tierra. 2013. Combined Sewer Overflow/Stormwater Outfall Investigation Quality Assurance Project Plan. Lower Passaic River Study Area. Revision 3. September 2013.

Tierra. 2014. Combined Sewer Overflow/Stormwater Outfall Phase I Evaluation/Recommendation Report, Revision 0. October 2014.

Tierra. 2016. Combined Sewer Overflow/Stormwater Outfall Phase I Evaluation/Recommendation Report, Revision 1. March 2016.

**Appendix A**

Data Evaluation Summaries and Analytical Results – PCDDs/PCDFs

Table A-1
Summary of Detected Dioxin Congeners by Method and Event
Phase I Report Addendum – Additional Data Evaluation

| Analyte (Dioxin) | Event / Attempt | Number of Detections (Parent and Duplicate Sample) | | | | | | | Percent Difference for HSM Compared to Other Methods for Total Concentrations (pg/L) When Detected by Both Methods | | Percent Difference for LSM Compared to WW for Total Concentrations (pg/L) When Detected by Both Methods | Percent Difference for HSM Compared to LSM for Particulate Concentrations (pg/L) When Detected by Both Methods | Percent Difference for HSM Compared to LSM for Dissolved Concentrations (pg/L) When Detected by Both Methods |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Total Concentrations (pg/L) | | | Particulate (pg/L) | | Dissolved (pg/L) | | | | | | |
| | | HSM | LSM | WW | HSM | LSM | HSM | LSM | LSM | WW | | | |
| 2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN | All | 2 | 0 | 0 | 2 | 0 | 0 | 0 | | | | | |
| 1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN | All | 2 | 0 | 0 | 2 | 0 | 0 | 0 | | | | | |
| 1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN | All | 6 | 0 | 0 | 6 | 0 | 0 | 0 | | | | | |
| 1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN | All | 6 | 0 | 2 | 6 | 0 | 1 | 0 | | -22% | | | |
| 1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN | All | 6 | 0 | 0 | 6 | 0 | 0 | 0 | | | | | |
| 1,2,3,4,6,7,8-HEPTACHLORODIBENZO-P-DIOXIN | All | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 18% | 4% | -11% | -48% | 491% |
| OCTACHLORODIBENZO-P-DIOXIN | All | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 7% | -17% | -22% | -43% | 564% |
| 2,3,7,8-TETRACHLORODIBENZOFURAN | All | 6 | 0 | 0 | 6 | 0 | 0 | 0 | | | | | |
| 1,2,3,7,8-PENTACHLORODIBENZOFURAN | All | 2 | 0 | 0 | 2 | 0 | 0 | 0 | | | | | |
| 2,3,4,7,8-PENTACHLORODIBENZOFURAN | All | 3 | 0 | 0 | 3 | 0 | 0 | 0 | | | | | |
| 1,2,3,4,7,8-HEXACHLORODIBENZOFURAN | All | 4 | 0 | 0 | 4 | 0 | 0 | 0 | | | | | |
| 1,2,3,6,7,8-HEXACHLORODIBENZOFURAN | All | 6 | 0 | 0 | 6 | 0 | 0 | 0 | | | | | |
| 2,3,4,6,7,8-HEXACHLORODIBENZOFURAN | All | 6 | 0 | 0 | 6 | 0 | 0 | 0 | | | | | |
| 1,2,3,7,8,9-HEXACHLORODIBENZOFURAN | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| 1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN | All | 6 | 4 | 4 | 6 | 4 | 6 | 3 | 28% | 5% | -17% | -51% | 403% |
| 1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN | All | 6 | 0 | 1 | 6 | 0 | 0 | 0 | | -68% | | | |
| OCTACHLORODIBENZOFURAN | All | 6 | 4 | 4 | 6 | 4 | 6 | 2 | 48% | 8% | -25% | -50% | 543% |
| Summary | | | | | | | | | | | | | |
| **17 Congeners** | **1/1** | **13.5** | **4** | **4** | **13.5** | **4** | **4.5** | **4** | **9%** | **13%** | **4%** | **-92%** | **798%** |
| **17 Congeners** | **1/3** | **15** | **4** | **4.5** | **15** | **4** | **4** | **2.5** | **47%** | **6%** | **-28%** | **-4%** | **260%** |
| **17 Congeners** | **2/2** | **11** | **2** | **3** | **11** | **2** | **4** | **2** | **0%** | **-51%** | **-43%** | **-47%** | **268%** |
| **17 Congeners** | **1/3 and 2/2 Only** | **13** | **3** | **3.8** | **13** | **3** | **4** | **2.3** | **32%** | **-20%** | **-33%** | **-18%** | **263%** |
| **17 Congeners** | **All** | **13.2** | **3** | **3.8** | **13.2** | **3** | **4.2** | **2.8** | **23%** | **-10%** | **-18%** | **-48%** | **501%** |
| **Percent of 17 Detected Congeners** | **All** | **77%** | **20%** | **23%** | **77%** | **20%** | **25%** | **17%** | | | | | |

**Summary:**
HSM has a higher frequency of detection (number of detections) for total (77%), particulate (77%), and dissolved (25%) concentrations.
Where detected in both methods, HSM total concentrations are on average 23% greater than LSM total concentrations.
Where detected in both methods, HSM total concentrations are slightly lower on average (-10%) than WW concentrations; however, there is great variability among events.
Where detected in both methods, LSM total concentrations are on average lower than WW concentrations (-18%).
Where detected in both methods, HSM particulate concentrations (pg/L) are on average lower than LSM particulate concentrations (pg/L) (-48%).
Where detected in both methods, HSM dissolved concentrations are on average much higher than LSM dissolved concentrations (501%).

**Abbreviations**
pg/L = picograms per liter
% = percent
HSM = high solids mass
LSM = low solids mass
WW = whole water

**Table A-2**
**Statistical Comparison of the Number of Detected Dioxin Congeners by Method and Event**
**Phase I Report Addendum – Additional Data Evaluation**

| Event | Number of Detections (Total Water Concentration) | | | Maximum Possible Number of Detections[1] | Chi-Square Test (p-value)[2] | | |
|---|---|---|---|---|---|---|---|
| | HSM | LSM | WW | | HSM vs. LSM | HSM vs. WW | LSM vs. WW |
| **1/1** | 27 | 8 | 8 | 34 | <0.001 | <0.001 | 1 |
| **1/3** | 30 | 8 | 9 | 34 | <0.001 | <0.001 | 0.78 |
| **2/2** | 22 | 4 | 6 | 34 | <0.001 | <0.001 | 0.49 |
| **All** | 79 | 20 | 23 | 102 | <0.001 | <0.001 | 0.61 |

**Notes**

[1] Total number of detections for event includes 2 duplicates and 17 congeners.

[2] A p-value less than 0.05 is considered significant and is shaded indicating that the number of detects is significantly different between methods.

**Conclusions**

The HSM method is better than both other methods with respect to the number of detected congeners.
The LSM and WW methods are similar with respect to the number of detected congeners.

**Abbreviations**

HSM = high solids mass
LSM = low solids mass
WW = whole water

**Table A-3**
**HSM Particulate Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| | HSM Particulate Sample Collection | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Event 2 Attempt 2 (12-7-13 PR135) | | | | | | Event 1 Attempt 3 (4-30-14 PR146) | | | | | | Event 1 Attempt 1 (6-10-13 PR106) | | | | | |
| | PR1CSOCLYHP-02B | | | PR1HPDUP-02B | | | PR1CSOCLYHP-01C | | | PR1HPDUP-01C | | | PR1CSOCLYHP-01A | | | PR1HPDUP-01A | | |
| Wet weight (gram) | 13.8 | | | 15.4 | | | 19.9 | | | 19.2 | | | 17.3 | | | 16.9 | | |
| % Solids | 36.3 | | | 36.4 | | | 50.2 | | | 52 | | | 29.5 | | | 30.1 | | |
| **Compound Identified** | **Weight gram (dry)** | **Sample Result pg/g** | **Converted Sample Result pg/L** | **Weight gram (dry)** | **Sample Result pg/g** | **Converted Sample Result pg/L** | **Weight gram (dry)** | **Sample Result pg/g** | **Converted Sample Result pg/L** | **Weight gram (dry)** | **Sample Result pg/g** | **Converted Sample Result pg/L** | **Weight gram (dry)** | **Sample Result pg/g** | **Converted Sample Result pg/L** | **Weight gram (dry)** | **Sample Result pg/g** | **Converted Sample Result pg/L** |
| 2,3,7,8-TETRACHLORODIBENZOP-DIOXIN | 5.01 | | 0 | 5.61 | | 0 | 9.99 | | 0 | 9.98 | | 0 | 5.10 | 2.36 | 0.0120 | 5.09 | 9.15 | 0.0471 |
| 1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN | 5.01 | | 0 | 5.61 | | 0 | 9.99 | 4.56 | 0.252 | 9.98 | 4.69 | 0.268 | 5.10 | | 0 | 5.09 | | 0 |
| 1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN | 5.01 | 6.32 | 0.204 | 5.61 | 6.16 | 0.199 | 9.99 | 9.01 | 0.498 | 9.98 | 9.24 | 0.529 | 5.10 | 5.96 | 0.0302 | 5.09 | 5.72 | 0.0295 |
| 1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN | 5.01 | 21.1 | 0.680 | 5.61 | 19.8 | 0.640 | 9.99 | 24.4 | 1.35 | 9.98 | 25 | 1.43 | 5.10 | 21.4 | 0.109 | 5.09 | 21.2 | 0.109 |
| 1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN | 5.01 | 15.2 | 0.490 | 5.61 | 14.2 | 0.459 | 9.99 | 17.5 | 0.968 | 9.98 | 21 | 1.20 | 5.10 | 15.3 | 0.0776 | 5.09 | 15.3 | 0.0788 |
| 1,2,3,4,6,7,8-HEPTACHLORODIBENZO-P-DIOXIN | 5.01 | 700 | 22.6 | 5.61 | 636 | 20.6 | 9.99 | 746 | 41.2 | 9.98 | 818 | 46.8 | 5.10 | 672 | 3.41 | 5.09 | 621 | 3.20 |
| OCTACHLORODIBENZO-P-DIOXIN | 5.01 | 9590 | 309 | 5.61 | 9560 | 309 | 9.99 | 12000 | 663 | 9.98 | 11600 | 664 | 5.10 | 9480 | 48.1 | 5.09 | 8960 | 46.2 |
| 2,3,7,8-TETRACHLORODIBENZOFURAN | 5.01 | 3.82 | 0.123 | 5.61 | 2.88 | 0.0931 | 9.99 | 3.85 | 0.213 | 9.98 | 3.6 | 0.206 | 5.10 | 4.76 | 0.0241 | 5.09 | 4.9 | 0.0252 |
| 1,2,3,7,8-PENTACHLORODIBENZOFURAN | 5.01 | | 0 | 5.61 | | 0 | 9.99 | 3.53 | 0.195 | 9.98 | 3.22 | 0.184 | 5.10 | | 0 | 5.09 | | 0 |
| 2,3,4,7,8-PENTACHLORODIBENZOFURAN | 5.01 | | 0 | 5.61 | | 0 | 9.99 | 4.77 | 0.264 | 9.98 | 4.21 | 0.241 | 5.10 | 0 | 0 | 5.09 | 5.26 | 0.0271 |
| 1,2,3,4,7,8-HEXACHLORODIBENZOFURAN | 5.01 | | 0 | 5.61 | | 0 | 9.99 | 14.9 | 0.824 | 9.98 | 14.4 | 0.824 | 5.10 | 20.9 | 0.106 | 5.09 | 31.5 | 0.162 |
| 1,2,3,6,7,8-HEXACHLORODIBENZOFURAN | 5.01 | 11.7 | 0.377 | 5.61 | 11.1 | 0.359 | 9.99 | 13.9 | 0.769 | 9.98 | 14.2 | 0.813 | 5.10 | 15.4 | 0.0781 | 5.09 | 18.2 | 0.0938 |
| 2,3,4,6,7,8-HEXACHLORODIBENZOFURAN | 5.01 | 10.5 | 0.338 | 5.61 | 7.89 | 0.255 | 9.99 | 9.96 | 0.551 | 9.98 | 10.5 | 0.601 | 5.10 | 19 | 0.0964 | 5.09 | 20.9 | 0.108 |
| 1,2,3,7,8,9-HEXACHLORODIBENZOFURAN | 5.01 | | 0 | 5.61 | | 0 | 9.99 | | 0 | 9.98 | | 0 | 5.10 | | 0 | 5.09 | | 0 |
| 1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN | 5.01 | 205 | 6.605 | 5.61 | 197 | 6.37 | 9.99 | 253 | 14.0 | 9.98 | 247 | 14.1 | 5.10 | 245 | 1.24 | 5.09 | 271 | 1.40 |
| 1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN | 5.01 | 13.3 | 0.429 | 5.61 | 12.5 | 0.404 | 9.99 | 13.8 | 0.763 | 9.98 | 14.4 | 0.824 | 5.10 | 16.4 | 0.0832 | 5.09 | 18.7 | 0.0963 |
| OCTACHLORODIBENZOFURAN | 5.01 | 444 | 14.3 | 5.61 | 458 | 14.8 | 9.99 | 488 | 27.0 | 9.98 | 469 | 26.8 | 5.10 | 486 | 2.46 | 5.09 | 549 | 2.83 |

**Abbreviations**
pg/L = picograms per liter
pg/g = picograms per gram

**Table A-4**
**HSM Dissolved Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| Compound Identified | HSM Dissolved Sample Collection | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Event 2 Attempt 2 (12-7-13 PR138) | | | | Event 1 Attempt 3 (4-30-14 PR147) | | | | Event 1 Attempt 1 (6-10-13 PR107) | | | |
| | PR1CSOCLYHD-02B | | PR1HDDUP-02B | | PR1CSOCLYHD-01C | | PR1HDDUP-01C | | PR1CSOCLYHD-01A | | PR1HDDUP-01A | |
| | Volume Liters | Sample Result pg/L | Volume Liters | Sample Result pg/L | Volume Liters | Sample Result pg/L | Volume Liters | Sample Result pg/L | Volume Liters | Sample Result pg/L | Volume Liters | Sample Result pg/L |
| 2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN | 9.66 | | 9.84 | | 9.74 | | 10.0 | | 9.91 | | 9.88 | |
| 1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN | 9.66 | | 9.84 | | 9.74 | | 10.0 | | 9.91 | | 9.88 | |
| 1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN | 9.66 | | 9.84 | | 9.74 | | 10.0 | | 9.91 | | 9.88 | |
| 1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN | 9.66 | | 9.84 | | 9.74 | | 10.0 | | 9.91 | 0 | 9.88 | 4.63 |
| 1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN | 9.66 | | 9.84 | | 9.74 | | 10.0 | | 9.91 | | 9.88 | |
| 1,2,3,4,6,7,8-HEPTACHLORODIBENZO-P-DIOXIN | 9.66 | 38.5 | 9.84 | 30.5 | 9.74 | 31.3 | 10.0 | 29.3 | 9.91 | 32.6 | 9.88 | 116 |
| OCTACHLORODIBENZO-P-DIOXIN | 9.66 | 338 | 9.84 | 199 | 9.74 | 226 | 10.0 | 269 | 9.91 | 365 | 9.88 | 720 |
| 2,3,7,8-TETRACHLORODIBENZOFURAN | 9.66 | | 9.84 | | 9.74 | | 10.0 | | 9.91 | | 9.88 | |
| 1,2,3,7,8-PENTACHLORODIBENZOFURAN | 9.66 | | 9.84 | | 9.74 | | 10.0 | | 9.91 | | 9.88 | |
| 2,3,4,7,8-PENTACHLORODIBENZOFURAN | 9.66 | | 9.84 | | 9.74 | | 10.0 | | 9.91 | | 9.88 | |
| 1,2,3,4,7,8-HEXACHLORODIBENZOFURAN | 9.66 | | 9.84 | | 9.74 | | 10.0 | | 9.91 | | 9.88 | |
| 1,2,3,6,7,8-HEXACHLORODIBENZOFURAN | 9.66 | | 9.84 | | 9.74 | | 10.0 | | 9.91 | | 9.88 | |
| 2,3,4,6,7,8-HEXACHLORODIBENZOFURAN | 9.66 | | 9.84 | | 9.74 | | 10.0 | | 9.91 | | 9.88 | |
| 1,2,3,7,8,9-HEXACHLORODIBENZOFURAN | 9.66 | | 9.84 | | 9.74 | | 10.0 | | 9.91 | | 9.88 | |
| 1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN | 9.66 | 17.3 | 9.84 | 13.4 | 9.74 | 15.3 | 10.0 | 13.0 | 9.91 | 16.6 | 9.88 | 17.6 |
| 1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN | 9.66 | | 9.84 | | 9.74 | | 10.0 | | 9.91 | | 9.88 | |
| OCTACHLORODIBENZOFURAN | 9.66 | 42.3 | 9.84 | 32.5 | 9.74 | 26.8 | 10.0 | 23.1 | 9.91 | 37.0 | 9.88 | 39.8 |

**Abbreviations**
pg/L = picograms per liter

**Table A-5**
**LSM Particulate Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| | LSM Particulate Sample Collection | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Event 2 Attempt 2 (12-7-13 PR140) | | | | | | Event 1 Attempt 3 (4-30-14 PR149) | | | | | | Event 1 Attempt 1 (6-10-13 PR109) | | | | | |
| | PR1CSOCLYLP-02B | | | PR1LPDUP-02B | | | PR1CSOCLYLP-01C | | | PR1LPDUP-01C | | | PR1CSOCLYLP-01A | | | PR1LPDUP-01A | | |
| Total Liters Filtered (L) | 9.476 | | | 9.491 | | | 9.663 | | | 10.103 | | | 10.035 | | | 9.713 | | |
| **Compound Identified** | **Weight gram** | **Sample Result pg/g** | **Converted Sample Result pg/L** | **Weight gram** | **Sample Result pg/g** | **Converted Sample Result pg/L** | **Weight gram** | **Sample Result pg/g** | **Converted Sample Result pg/L** | **Weight gram** | **Sample Result pg/g** | **Converted Sample Result pg/L** | **Weight gram** | **Sample Result pg/g** | **Converted Sample Result pg/L** | **Weight gram** | **Sample Result pg/g** | **Converted Sample Result pg/L** |
| 2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN | 0.0796 | | 0 | 0.128 | | 0 | 0.0773 | | 0 | 0.0808 | | 0 | 0.371 | | 0 | 0.612 | | 0 |
| 1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN | 0.0796 | | 0 | 0.128 | | 0 | 0.0773 | | 0 | 0.0808 | | 0 | 0.371 | | 0 | 0.612 | | 0 |
| 1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN | 0.0796 | | 0 | 0.128 | | 0 | 0.0773 | | 0 | 0.0808 | | 0 | 0.371 | | 0 | 0.612 | | 0 |
| 1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN | 0.0796 | | 0 | 0.128 | | 0 | 0.0773 | | 0 | 0.0808 | | 0 | 0.371 | | 0 | 0.612 | | 0 |
| 1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN | 0.0796 | | 0 | 0.128 | | 0 | 0.0773 | | 0 | 0.0808 | | 0 | 0.371 | | 0 | 0.612 | | 0 |
| 1,2,3,4,6,7,8-HEPTACHLORODIBENZO-P-DIOXIN | 0.0796 | 4920 | 41.3 | 0.128 | 3160 | 42.6 | 0.0773 | 3750 | 30.0 | 0.0808 | 7400 | 59.2 | 0.371 | 1940 | 71.7 | 0.612 | 845 | 53.2 |
| OCTACHLORODIBENZO-P-DIOXIN | 0.0796 | 64000 | 538 | 0.128 | 43100 | 581 | 0.0773 | 45500 | 364 | 0.0808 | 109000 | 872 | 0.371 | 15700 | 580 | 0.612 | 8560 | 539 |
| 2,3,7,8-TETRACHLORODIBENZOFURAN | 0.0796 | | 0 | 0.128 | | 0 | 0.0773 | | 0 | 0.0808 | | 0 | 0.371 | | 0 | 0.612 | | 0 |
| 1,2,3,7,8-PENTACHLORODIBENZOFURAN | 0.0796 | | 0 | 0.128 | | 0 | 0.0773 | | 0 | 0.0808 | | 0 | 0.371 | | 0 | 0.612 | | 0 |
| 2,3,4,7,8-PENTACHLORODIBENZOFURAN | 0.0796 | | 0 | 0.128 | | 0 | 0.0773 | | 0 | 0.0808 | | 0 | 0.371 | | 0 | 0.612 | | 0 |
| 1,2,3,4,7,8-HEXACHLORODIBENZOFURAN | 0.0796 | | 0 | 0.128 | | 0 | 0.0773 | | 0 | 0.0808 | | 0 | 0.371 | | 0 | 0.612 | | 0 |
| 1,2,3,6,7,8-HEXACHLORODIBENZOFURAN | 0.0796 | | 0 | 0.128 | | 0 | 0.0773 | | 0 | 0.0808 | | 0 | 0.371 | | 0 | 0.612 | | 0 |
| 2,3,4,6,7,8-HEXACHLORODIBENZOFURAN | 0.0796 | | 0 | 0.128 | | 0 | 0.0773 | | 0 | 0.0808 | | 0 | 0.371 | | 0 | 0.612 | | 0 |
| 1,2,3,7,8,9-HEXACHLORODIBENZOFURAN | 0.0796 | | 0 | 0.128 | | 0 | 0.0773 | | 0 | 0.0808 | | 0 | 0.371 | | 0 | 0.612 | | 0 |
| 1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN | 0.0796 | | 0 | 0.128 | | 0 | 0.0773 | 1760 | 14.1 | 0.0808 | 2230 | 17.8 | 0.371 | 396 | 14.6 | 0.612 | 215 | 13.5 |
| 1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN | 0.0796 | | 0 | 0.128 | | 0 | 0.0773 | | 0 | 0.0808 | | 0 | 0.371 | | 0 | 0.612 | | 0 |
| OCTACHLORODIBENZOFURAN | 0.0796 | | 0 | 0.128 | | 0 | 0.0773 | 3280 | 26.2 | 0.0808 | 4070 | 32.6 | 0.371 | 790 | 29.2 | 0.612 | 432 | 27.2 |

**Abbreviations**
pg/L = picograms per liter
pg/g = picograms per gram

**Table A-6**
**LSM Dissolved Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| | LSM Dissolved Sample Collection | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Event 2 Attempt 2 (12-7-13 PR141) | | | | Event 1 Attempt 3 (4-30-14 PR150) | | | | Event 1 Attempt 1 (6-10-13 PR110) | | | |
| | PR1CSOCLYLD-02B | | PR1LDDUP-02B | | PR1CSOCLYLD-01C | | PR1LDDUP-01C | | PR1CSOCLYLD-01A | | PR1LDDUP-01A | |
| Compound Identified | Volume Liters | Sample Result pg/L | Volume Liters | Sample Result pg/L | Volume Liters | Sample Result pg/L | Volume Liters | Sample Result pg/L | Volume Liters | Sample Result pg/L | Volume Liters | Sample Result pg/L |
| 2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN | 9.93 | | 9.72 | | 9.90 | | 9.99 | | 9.79 | | 9.71 | |
| 1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN | 9.93 | | 9.72 | | 9.90 | | 9.99 | | 9.79 | | 9.71 | |
| 1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN | 9.93 | | 9.72 | | 9.90 | | 9.99 | | 9.79 | | 9.71 | |
| 1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN | 9.93 | | 9.72 | | 9.90 | | 9.99 | | 9.79 | | 9.71 | |
| 1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN | 9.93 | | 9.72 | | 9.90 | | 9.99 | | 9.79 | | 9.71 | |
| 1,2,3,4,6,7,8-HEPTACHLORODIBENZO-P-DIOXIN | 9.93 | 11.0 | 9.72 | 8.92 | 9.90 | 13.0 | 9.99 | 10.4 | 9.79 | 6.33 | 9.71 | 6.41 |
| OCTACHLORODIBENZO-P-DIOXIN | 9.93 | 73.2 | 9.72 | 64.7 | 9.90 | 74.90 | 9.99 | 72.8 | 9.79 | 41.7 | 9.71 | 44.0 |
| 2,3,7,8-TETRACHLORODIBENZOFURAN | 9.93 | | 9.72 | | 9.90 | | 9.99 | | 9.79 | | 9.71 | |
| 1,2,3,7,8-PENTACHLORODIBENZOFURAN | 9.93 | | 9.72 | | 9.90 | | 9.99 | | 9.79 | | 9.71 | |
| 2,3,4,7,8-PENTACHLORODIBENZOFURAN | 9.93 | | 9.72 | | 9.90 | | 9.99 | | 9.79 | | 9.71 | |
| 1,2,3,4,7,8-HEXACHLORODIBENZOFURAN | 9.93 | | 9.72 | | 9.90 | | 9.99 | | 9.79 | | 9.71 | |
| 1,2,3,6,7,8-HEXACHLORODIBENZOFURAN | 9.93 | | 9.72 | | 9.90 | | 9.99 | | 9.79 | | 9.71 | |
| 2,3,4,6,7,8-HEXACHLORODIBENZOFURAN | 9.93 | | 9.72 | | 9.90 | | 9.99 | | 9.79 | | 9.71 | |
| 1,2,3,7,8,9-HEXACHLORODIBENZOFURAN | 9.93 | | 9.72 | | 9.90 | | 9.99 | | 9.79 | | 9.71 | |
| 1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN | 9.93 | | 9.72 | | 9.90 | 5.81 | 9.99 | 0 | 9.79 | 3.40 | 9.71 | 3.20 |
| 1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN | 9.93 | | 9.72 | | 9.90 | | 9.99 | | 9.79 | | 9.71 | |
| OCTACHLORODIBENZOFURAN | 9.93 | | 9.72 | | 9.90 | | 9.99 | | 9.79 | 6.05 | 9.71 | 5.9 |

**Abbreviations**
pg/L = picograms per liter

**Table A-7**
**Whole Water Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| Compound Identified | Whole Water Sample Collection | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Event 2 Attempt 2 (12-7-13 PR134) | | | | Event 1 Attempt 3 (4-30-14 PR145) | | | | Event 1 Attempt 1 (6-10-13 PR105) | | | |
| | PR1CSOCLYWW-02B | | PR1WWDUP-02B | | PR1CSOCLYWW-01C | | PR1WWDUP-01C | | PR1CSOCLYWW-01A | | PR1WWDUP-01A | |
| | Volume Liters | Sample Result pg/L | Volume Liters | Sample Result pg/L | Volume Liters | Sample Result pg/L | Volume Liters | Sample Result pg/L | Volume Liters | Sample Result pg/L | Volume Liters | Sample Result pg/L |
| 2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN | 9.73 | | 9.63 | | 9.78 | | 9.67 | | 7.23 | | 9.5 | |
| 1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN | 9.73 | | 9.63 | | 9.78 | | 9.67 | | 7.23 | | 9.5 | |
| 1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN | 9.73 | | 9.63 | | 9.78 | | 9.67 | | 7.23 | | 9.5 | |
| 1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN | 9.73 | | 9.63 | 2.76 | 9.78 | 2.58 | 9.67 | | 7.23 | | 9.5 | |
| 1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN | 9.73 | | 9.63 | | 9.78 | | 9.67 | | 7.23 | | 9.5 | |
| 1,2,3,4,6,7,8-HEPTACHLORODIBENZO-P-DIOXIN | 9.73 | 84.3 | 9.63 | 87.4 | 9.78 | 81.5 | 9.67 | 71.1 | 7.23 | 62.1 | 9.5 | 41.3 |
| OCTACHLORODIBENZO-P-DIOXIN | 9.73 | 1090 | 9.63 | 1230 | 9.78 | 1060 | 9.67 | 821 | 7.23 | 715 | 9.5 | 429 |
| 2,3,7,8-TETRACHLORODIBENZOFURAN | 9.73 | | 9.63 | | 9.78 | | 9.67 | | 7.23 | | 9.5 | |
| 1,2,3,7,8-PENTACHLORODIBENZOFURAN | 9.73 | | 9.63 | | 9.78 | | 9.67 | | 7.23 | | 9.5 | |
| 2,3,4,7,8-PENTACHLORODIBENZOFURAN | 9.73 | | 9.63 | | 9.78 | | 9.67 | | 7.23 | | 9.5 | |
| 1,2,3,4,7,8-HEXACHLORODIBENZOFURAN | 9.73 | | 9.63 | | 9.78 | | 9.67 | | 7.23 | | 9.5 | |
| 1,2,3,6,7,8-HEXACHLORODIBENZOFURAN | 9.73 | | 9.63 | | 9.78 | | 9.67 | | 7.23 | | 9.5 | |
| 2,3,4,6,7,8-HEXACHLORODIBENZOFURAN | 9.73 | | 9.63 | | 9.78 | | 9.67 | | 7.23 | | 9.5 | |
| 1,2,3,7,8,9-HEXACHLORODIBENZOFURAN | 9.73 | | 9.63 | | 9.78 | | 9.67 | | 7.23 | | 9.5 | |
| 1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN | 9.73 | | 9.63 | | 9.78 | 29.1 | 9.67 | 20.2 | 7.23 | 18 | 9.5 | 20.5 |
| 1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN | 9.73 | | 9.63 | 2.61 | 9.78 | | 9.67 | | 7.23 | | 9.5 | |
| OCTACHLORODIBENZOFURAN | 9.73 | | 9.63 | | 9.78 | 53.7 | 9.67 | 38.0 | 7.23 | 36.6 | 9.5 | 43.2 |

**Abbreviations**
pg/L = picograms per liter

## Appendix B

Data Evaluation Summaries and Analytical Results – PCB Congeners

**Table B-1**
**Summary of Detected PCB Congeners by Method and Event**
**Phase I Report Addendum – Additional Data Evaluation**

| Analyte (PCBs) | Event/ Attempt | Number of Detections (Parent and Duplicate Sample): Total Concentrations (pg/L) | | | Particulates (pg/L) | | Dissolved (pg/L) | | Percent Difference for HSM Compared to Other Methods for Total Concentrations (pg/L) When Detected by Both Methods | | Percent Difference for LSM Compared to WW for Total Concentrations (pg/L) When Detected by Both Methods | Percent Difference for HSM Compared to LSM for Particulate Concentrations (pg/L) When Detected by Both Methods | Percent Difference for HSM Compared to LSM for Dissolved Concentrations (pg/L) When Detected by Both Methods |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | HSM | LSM | WW | HSM | LSM | HSM | LSM | LSM | WW | | | |
| PCB-1 | All | 2 | 2 | 4 | 2 | 0 | 2 | 2 | 66% | 47% | -11% | | 25% |
| PCB-2 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-3 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-4/10 | All | 6 | 3 | 4 | 6 | 1 | 0 | 2 | -57% | -71% | -50% | -81% | |
| PCB-5/8 | All | 4 | 0 | 2 | 4 | 0 | 0 | 0 | | -95% | | | |
| PCB-6 | All | 4 | 0 | 3 | 4 | 0 | 2 | 0 | | 57% | | | |
| PCB-7/9 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-11 | All | 2 | 0 | 2 | 2 | 0 | 0 | 0 | | | | | |
| PCB-12/13 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-14 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-15 | All | 5 | 0 | 2 | 5 | 0 | 0 | 0 | | -93% | | | |
| PCB-16/32 | All | 6 | 2 | 3 | 6 | 2 | 0 | 0 | -89% | -25% | -45% | -89% | |
| PCB-17 | All | 6 | 2 | 4 | 6 | 2 | 0 | 0 | -88% | -50% | -38% | -88% | |
| PCB-18 | All | 6 | 2 | 2 | 6 | 2 | 0 | 0 | -89% | -94% | -43% | -89% | |
| PCB-19 | All | 6 | 2 | 5 | 6 | 2 | 0 | 0 | -89% | -39% | -51% | -89% | |
| PCB-20/21/33 | All | 5 | 2 | 2 | 5 | 2 | 0 | 0 | -93% | -96% | -45% | -93% | |
| PCB-22 | All | 6 | 2 | 2 | 6 | 2 | 0 | 0 | -94% | -96% | -38% | -94% | |
| PCB-23 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-24/27 | All | 4 | 0 | 2 | 4 | 0 | 0 | 0 | | -22% | | | |
| PCB-25 | All | 6 | 1 | 5 | 6 | 1 | 2 | 0 | 172% | 152% | -61% | -89% | |
| PCB-26 | All | 6 | 2 | 3 | 6 | 2 | 0 | 0 | -93% | -17% | -37% | -93% | |
| PCB-28 | All | 6 | 2 | 3 | 6 | 2 | 0 | 0 | -92% | -12% | -38% | -92% | |
| PCB-29 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-30 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-31 | All | 6 | 2 | 2 | 6 | 2 | 0 | 0 | -93% | -96% | -33% | -93% | |
| PCB-34 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-35 | All | 5 | 1 | 3 | 5 | 1 | 0 | 0 | 118% | -50% | -56% | 118% | |
| PCB-36 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-37 | All | 5 | 2 | 2 | 5 | 2 | 0 | 0 | -92% | -95% | -39% | -92% | |
| PCB-38 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-39 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-40 | All | 6 | 3 | 3 | 6 | 3 | 0 | 0 | -3% | 11% | -10% | -3% | |
| PCB-41/64/71/72 | All | 6 | 3 | 4 | 6 | 3 | 2 | 0 | 51% | 1% | -33% | 7% | |
| PCB-42/59 | All | 6 | 3 | 4 | 6 | 3 | 0 | 0 | 13% | -36% | -36% | 13% | |
| PCB-43/49 | All | 6 | 3 | 4 | 6 | 3 | 2 | 0 | 48% | -5% | -34% | 3% | |
| PCB-44 | All | 6 | 3 | 4 | 6 | 3 | 1 | 0 | 28% | -19% | -32% | 8% | |
| PCB-45 | All | 6 | 3 | 3 | 6 | 3 | 0 | 0 | -17% | -12% | -17% | -17% | |
| PCB-46 | All | 6 | 2 | 4 | 6 | 2 | 1 | 0 | -1% | 30% | -41% | -1% | |
| PCB-47 | All | 3 | 2 | 3 | 3 | 2 | 0 | 0 | 136% | 98% | -39% | 136% | |
| PCB-48/75 | All | 6 | 3 | 5 | 6 | 3 | 0 | 0 | -29% | -10% | -9% | -29% | |
| PCB-50 | All | 0 | 1 | 2 | 0 | 1 | 0 | 0 | | | -65% | | |
| PCB-51 | All | 5 | 2 | 2 | 5 | 2 | 0 | 0 | 26% | -9% | -29% | 26% | |
| PCB-52/69 | All | 6 | 3 | 4 | 6 | 3 | 2 | 0 | 36% | -13% | -34% | -4% | |
| PCB-53 | All | 6 | 3 | 4 | 6 | 3 | 1 | 0 | 39% | -28% | -43% | 9% | |
| PCB-54 | All | 1 | 0 | 0 | 1 | 0 | 0 | 0 | | | | | |
| PCB-55 | All | 1 | 0 | 0 | 1 | 0 | 0 | 0 | | | | | |
| PCB-56/60 | All | 6 | 3 | 3 | 6 | 3 | 2 | 0 | 29% | 35% | -5% | -4% | |
| PCB-57 | All | 1 | 0 | 0 | 1 | 0 | 0 | 0 | | | | | |
| PCB-58 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-61/70 | All | 6 | 3 | 5 | 6 | 3 | 2 | 0 | 28% | 30% | -31% | -6% | |
| PCB-62 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-63 | All | 4 | 1 | 2 | 4 | 1 | 0 | 0 | 17% | -37% | 2% | 17% | |
| PCB-65 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-67 | All | 2 | 0 | 0 | 2 | 0 | 0 | 0 | | | | | |
| PCB-68 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-73 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-74 | All | 6 | 3 | 4 | 6 | 3 | 2 | 2 | 16% | -4% | -13% | -11% | 120% |
| PCB-76/66 | All | 6 | 3 | 5 | 6 | 3 | 2 | 0 | 39% | 53% | -30% | 4% | |
| PCB-77 | All | 4 | 3 | 3 | 4 | 3 | 0 | 0 | 19% | 16% | -13% | 19% | |
| PCB-78 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-79 | All | 2 | 0 | 0 | 2 | 0 | 0 | 0 | | | | | |
| PCB-80 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-81 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-82 | All | 6 | 4 | 6 | 6 | 4 | 4 | 2 | 16% | -3% | -18% | -10% | 66% |
| PCB-83 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-84/92 | All | 6 | 4 | 6 | 6 | 4 | 2 | 0 | 15% | -11% | -30% | -13% | |
| PCB-85/116 | All | 6 | 6 | 6 | 6 | 4 | 6 | 4 | 199% | 21% | -34% | -7% | 96% |
| PCB-86 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-87/117/125 | All | 6 | 5 | 6 | 6 | 5 | 3 | 0 | 70% | -8% | -43% | 43% | |
| PCB-88/91 | All | 6 | 4 | 6 | 6 | 4 | 4 | 2 | 11% | 1% | -16% | -17% | 63% |
| PCB-89 | All | 1 | 0 | 0 | 1 | 0 | 0 | 0 | | | | | |
| PCB-90/101 | All | 6 | 4 | 6 | 6 | 4 | 5 | 0 | 26% | 13% | -31% | -13% | |
| PCB-93 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-94 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-95/98/102 | All | 6 | 4 | 6 | 6 | 4 | 0 | 0 | -18% | -28% | -32% | -18% | |
| PCB-96 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-97 | All | 6 | 4 | 6 | 6 | 4 | 2 | 0 | 22% | -12% | -33% | -7% | |
| PCB-99 | All | 6 | 4 | 6 | 6 | 4 | 6 | 0 | 44% | 24% | -30% | -6% | |
| PCB-100 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-103 | All | 1 | 0 | 0 | 1 | 0 | 0 | 0 | | | | | |
| PCB-104 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-105 | All | 6 | 5 | 6 | 6 | 5 | 4 | 0 | 77% | -1% | -43% | 44% | |
| PCB-106/118 | All | 6 | 5 | 6 | 6 | 5 | 5 | 0 | 98% | 9% | -40% | 46% | |
| PCB-107/109 | All | 6 | 4 | 5 | 6 | 4 | 3 | 0 | 5% | 82% | -14% | -6% | |
| PCB-108/112 | All | 6 | 3 | 6 | 6 | 3 | 2 | 0 | 47% | -14% | -42% | 15% | |
| PCB-110 | All | 6 | 5 | 6 | 6 | 5 | 4 | 0 | 102% | 0% | -42% | 71% | |
| PCB-111/115 | All | 4 | 2 | 1 | 4 | 2 | 0 | 0 | -87% | -87% | 4% | -87% | |
| PCB-113 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-114 | All | 4 | 2 | 2 | 4 | 2 | 0 | 0 | -79% | -85% | -16% | -79% | |
| PCB-119 | All | 4 | 0 | 1 | 4 | 0 | 0 | 0 | | -87% | | | |
| PCB-120 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-121 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-122 | All | 1 | 0 | 1 | 1 | 0 | 0 | 0 | | | | | |
| PCB-123 | All | 4 | 1 | 0 | 4 | 1 | 0 | 0 | -86% | | | -86% | |
| PCB-124 | All | 6 | 3 | 6 | 6 | 3 | 0 | 0 | 31% | -27% | -40% | 31% | |
| PCB-126 | All | 3 | 0 | 0 | 3 | 0 | 0 | 0 | | | | | |
| PCB-127 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |

**Table B-1**
**Summary of Detected PCB Congeners by Method and Event**
**Phase I Report Addendum – Additional Data Evaluation**

| Analyte (PCBs) | Event/ Attempt | Number of Detections (Parent and Duplicate Sample): Total Concentrations (pg/L) HSM | Total Concentrations (pg/L) LSM | Total Concentrations (pg/L) WW | Particulates (pg/L) HSM | Particulates (pg/L) LSM | Dissolved (pg/L) HSM | Dissolved (pg/L) LSM | Percent Difference for HSM Compared to Other Methods for Total Concentrations (pg/L) When Detected by Both Methods: LSM | Percent Difference for HSM Compared to Other Methods for Total Concentrations (pg/L) When Detected by Both Methods: WW | Percent Difference for LSM Compared to WW for Total Concentrations (pg/L) When Detected by Both Methods | Percent Difference for HSM Compared to LSM for Particulate Concentrations (pg/L) When Detected by Both Methods | Percent Difference for HSM Compared to LSM for Dissolved Concentrations (pg/L) When Detected by Both Methods |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PCB-128/162 | All | 6 | 5 | 6 | 6 | 5 | 6 | 2 | 92% | 15% | -36% | 46% | 63% |
| PCB-129 | All | 6 | 4 | 6 | 6 | 4 | 3 | 0 | 19% | -8% | -39% | -7% | |
| PCB-130 | All | 6 | 4 | 6 | 6 | 4 | 3 | 0 | 9% | 1% | -32% | -1% | |
| PCB-131 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-132/161 | All | 6 | 5 | 6 | 6 | 5 | 4 | 0 | 102% | 7% | -42% | 50% | |
| PCB-133/142 | All | 6 | 3 | 5 | 6 | 3 | 0 | 0 | 19% | 6% | -41% | 19% | |
| PCB-134/143 | All | 6 | 4 | 6 | 6 | 4 | 2 | 0 | 31% | -12% | -40% | 1% | |
| PCB-135 | All | 6 | 4 | 6 | 6 | 4 | 6 | 2 | 5% | 15% | -14% | -23% | 53% |
| PCB-136 | All | 6 | 4 | 5 | 6 | 4 | 4 | 1 | 11% | 36% | -23% | -24% | 221% |
| PCB-137 | All | 6 | 4 | 6 | 6 | 4 | 2 | 0 | -20% | 5% | -14% | -20% | |
| PCB-138/163/164 | All | 6 | 5 | 6 | 6 | 5 | 6 | 0 | 113% | 11% | -44% | 47% | |
| PCB-139/149 | All | 6 | 4 | 6 | 6 | 4 | 4 | 2 | 4% | 1% | -15% | -22% | 61% |
| PCB-140 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-141 | All | 6 | 4 | 6 | 6 | 4 | 2 | 0 | 15% | -16% | -36% | -9% | |
| PCB-144 | All | 6 | 4 | 5 | 6 | 4 | 0 | 0 | -30% | 18% | -24% | -30% | |
| PCB-145 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-146/165 | All | 6 | 4 | 6 | 6 | 4 | 2 | 0 | 18% | -13% | -35% | -7% | |
| PCB-147 | All | 5 | 0 | 1 | 5 | 0 | 0 | 0 | | -87% | | | |
| PCB-148 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-150 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-151 | All | 6 | 4 | 4 | 6 | 4 | 1 | 2 | -33% | -34% | -17% | -29% | -16% |
| PCB-152 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-153 | All | 6 | 4 | 6 | 6 | 4 | 4 | 0 | 36% | -6% | -36% | -9% | |
| PCB-154 | All | 1 | 0 | 0 | 1 | 0 | 0 | 0 | | | | | |
| PCB-155 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-156 | All | 6 | 4 | 6 | 6 | 4 | 4 | 0 | 39% | -6% | -37% | 0% | |
| PCB-157 | All | 6 | 2 | 4 | 6 | 2 | 0 | 0 | 49% | 34% | -38% | 49% | |
| PCB-158/160 | All | 6 | 4 | 6 | 6 | 4 | 2 | 0 | 20% | -11% | -37% | -4% | |
| PCB-159 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-166 | All | 2 | 0 | 0 | 2 | 0 | 0 | 0 | | | | | |
| PCB-167 | All | 6 | 3 | 6 | 6 | 3 | 0 | 0 | 48% | -23% | -49% | 48% | |
| PCB-168 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-169 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-170 | All | 6 | 5 | 6 | 6 | 5 | 4 | 2 | 53% | -7% | -37% | 34% | 67% |
| PCB-171 | All | 6 | 4 | 6 | 6 | 4 | 1 | 0 | 1% | -27% | -39% | -12% | |
| PCB-172 | All | 6 | 3 | 6 | 6 | 3 | 0 | 0 | -4% | -29% | -50% | -4% | |
| PCB-173 | All | 1 | 0 | 0 | 1 | 0 | 0 | 0 | | | | | |
| PCB-174 | All | 6 | 4 | 4 | 6 | 4 | 4 | 2 | 13% | -24% | -34% | -13% | 58% |
| PCB-175 | All | 2 | 0 | 0 | 2 | 0 | 0 | 0 | | | | | |
| PCB-176 | All | 6 | 2 | 3 | 6 | 2 | 0 | 0 | 2% | -46% | -44% | 2% | |
| PCB-177 | All | 6 | 4 | 6 | 6 | 4 | 4 | 2 | 14% | -11% | -34% | -11% | 73% |
| PCB-178 | All | 6 | 3 | 5 | 6 | 3 | 0 | 0 | -18% | -14% | -28% | -18% | |
| PCB-179 | All | 6 | 3 | 4 | 6 | 3 | 0 | 0 | -1% | -46% | -45% | -1% | |
| PCB-180 | All | 6 | 4 | 4 | 6 | 4 | 0 | 0 | -13% | -46% | -37% | -13% | |
| PCB-181 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-182/187 | All | 6 | 4 | 4 | 6 | 4 | 2 | 2 | -25% | -34% | -24% | -26% | 57% |
| PCB-183 | All | 6 | 4 | 4 | 6 | 4 | 2 | 2 | -18% | -32% | -26% | -19% | 56% |
| PCB-184 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-185 | All | 6 | 2 | 3 | 6 | 2 | 0 | 0 | 6% | -52% | -49% | 6% | |
| PCB-186 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-188 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-189 | All | 3 | 0 | 0 | 3 | 0 | 0 | 0 | | | | | |
| PCB-190 | All | 6 | 4 | 4 | 6 | 4 | 0 | 0 | -14% | -51% | -46% | -14% | |
| PCB-191 | All | 1 | 0 | 0 | 1 | 0 | 0 | 0 | | | | | |
| PCB-192 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-193 | All | 6 | 2 | 3 | 6 | 2 | 0 | 0 | 25% | -26% | -55% | 25% | |
| PCB-194 | All | 6 | 4 | 4 | 6 | 4 | 2 | 0 | -4% | -40% | -37% | -17% | |
| PCB-195 | All | 5 | 3 | 6 | 5 | 3 | 0 | 0 | 8% | -40% | -47% | 8% | |
| PCB-196/203 | All | 6 | 4 | 4 | 6 | 4 | 2 | 2 | -35% | -35% | -10% | -38% | 58% |
| PCB-197 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-198 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-199 | All | 6 | 4 | 6 | 6 | 4 | 2 | 2 | -34% | -9% | -20% | -36% | 57% |
| PCB-200 | All | 5 | 1 | 2 | 5 | 1 | 0 | 0 | 26% | -30% | 7% | 26% | |
| PCB-201 | All | 6 | 1 | 2 | 6 | 1 | 0 | 0 | 46% | -33% | -16% | 46% | |
| PCB-202 | All | 6 | 2 | 4 | 6 | 2 | 0 | 0 | -14% | 15% | -36% | -14% | |
| PCB-204 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-205 | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| PCB-206 | All | 6 | 2 | 4 | 6 | 2 | 0 | 0 | 25% | -42% | -51% | 25% | |
| PCB-207 | All | 1 | 0 | 1 | 1 | 0 | 0 | 0 | | | | | |
| PCB-208 | All | 6 | 2 | 3 | 6 | 2 | 0 | 0 | 32% | -32% | -37% | 32% | |
| PCB-209 | All | 4 | 2 | 1 | 4 | 2 | 0 | 0 | -82% | -85% | -15% | -82% | |
| Total PCBs | All | 591 | 298 | 430 | 591 | 292 | 151 | 37 | 412% | 28% | -51% | 375% | 5352% |
| **Summary** | | | | | | | | | | | | | |
| **168 Congeners/Coelutions** | **1/1** | **98** | **80.5** | **92** | **98** | **81** | **39** | **1.0** | **-60%** | **-76%** | **-36%** | **-87%** | **120%** |
| **168 Congeners/Coelutions** | **1/3** | **96** | **63** | **79** | **96** | **62** | **24** | **16** | **82%** | **29%** | **-27%** | **79%** | **67%** |
| **168 Congeners/Coelutions** | **2/2** | **102** | **6** | **44.5** | **102** | **4.0** | **13.5** | **2.0** | **221%** | **52%** | **-54%** | **148%** | **76%** |
| **168 Congeners/Coelutions** | **1/3 and 2/2 Only** | **99** | **34** | **62** | **99** | **33** | **19** | **8.8** | **98%** | **37%** | **-30%** | **85%** | **68%** |
| **168 Congeners/Coelutions** | **All** | **99** | **50** | **72** | **99** | **49** | **25** | **6.2** | **19%** | **-10%** | **-33%** | **-2%** | **71%** |
| **Percent of 168 Detected Congeners** | **All** | **59%** | **30%** | **43%** | **59%** | **29%** | **15%** | **4%** | | | | | |

**Conclusions**

HSM has a higher frequency of detection for both total (59%), particulate (59%), and dissolved (15%) concentrations.
Where detected in both methods, HSM total concentrations are on average 19% greater than total LSM concentrations; however, there is large variability among events.
Where detected in both methods, HSM total concentrations are slightly lower on average (-10%) than WW concentrations; however, there is great variability among events.
Where detected in both methods, LSM total concentrations are on average lower than WW concentrations (-33%).
Where detected in both methods, HSM particulate concentrations are on average slightly lower than LSM particulate concentrations (-2%).
Where detected in both methods, HSM dissolved concentrations are on average 71% greater than LSM dissolved concentrations.

**Abbreviations**

pg/L = picograms per liter
% = percent
HSM = high solids mass
LSM = low solids mass
WW = whole water

**Table B-2**
**Statistical Comparison of the Number of Detected PCB Congeners by Method and Event**
**Phase I Report Addendum – Additional Data Evaluation**

| Event | Number of Detections (Total Water Concentration) | | | Maximum Possible Number of Detections[1] | Chi-Square Test (p-value)[2] | | |
|---|---|---|---|---|---|---|---|
| | HSM | LSM | WW | | HSM vs. LSM | HSM vs. WW | LSM vs. WW |
| 1/1 | 196 | 161 | 184 | 336 | 0.0068 | 0.350 | 0.070 |
| 1/3 | 191 | 125 | 157 | 336 | <0.001 | 0.009 | 0.012 |
| 2/1 | 204 | 12 | 89 | 336 | <0.001 | <0.001 | <0.001 |
| All | 591 | 298 | 430 | 1008 | <0.001 | <0.001 | <0.001 |

**Notes**

[1] Total number of detections for event includes 2 duplicates and 168 congeners/co-elutions.

[2] A p-value less than 0.05 is considered significant and is shaded indicating that the number of detects is significantly different

**Conclusions**

The HSM method is better than the LSM method for all events with respect to the number of detected congeners/co-elutions.

The HSM method is better than the WW method for all events with respect to the number of detected congeners/co-elutions; however the difference for event 1/1 is not statistically significant.

The WW method is better than the LSM method for all events with respect to the number of detected congeners/co-elutions.

**Abbreviations**

HSM = high solids mass
LSM = low solids mass
WW = whole water

**Table B-3**
**HSM Particulate Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| | HSM Particulate Sample Collection | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Event 2 Attempt 2 (12-7 PR135) | | | | | | Event 1 Attempt 3 (4-30 PR146) | | | | | | Event 1 Attempt 1 (6-10-13 PR106) | | | | | |
| | PR1CSOCLYHP-02B | | | PR1HPDUP-02B | | | PR1CSOCLYHP-01C | | | PR1HPDUP-01C | | | PR1CSOCLYHP-01A | | | PR1HPDUP-01A | | |
| Wet weight (gram) | 13.9 | | | 15.6 | | | 5.85 | | | 5.8 | | | 20.4 | | | 19.9 | | |
| % solids | 36.4 | | | 32.9 | | | 50.2 | | | 52.0 | | | 29.5 | | | 30.1 | | |
| **Compound Identified** | Weight gram (dry) | Sample Result pg/g | Converted Sample Result pg/L | Weight gram (dry) | Sample Result pg/g | Converted Sample Result pg/L | Weight gram (dry) | Sample Result pg/g | Converted Sample Result pg/L | Weight gram (dry) | Sample Result pg/g | Converted Sample Result pg/L | Weight gram (dry) | Sample Result pg/g | Converted Sample Result pg/L | Weight gram (dry) | Sample Result pg/g | Converted Sample Result pg/L |
| PCB-1 | 5.06 | 204 | 7 | 5.13 | 192 | 6 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-2 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-3 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-4/10 | 5.06 | 915 | 30 | 5.13 | 1,080 | 32 | 2.94 | 1,550 | 86 | 3.02 | 1,420 | 81 | 6.02 | 870 | 4.38 | 5.99 | 804 | 4.13 |
| PCB-5/8 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | 2,190 | 121 | 3.02 | 1,970 | 113 | 6.02 | 1,340 | 6.75 | 5.99 | 1,270 | 6.53 |
| PCB-6 | 5.06 | 446 | 14 | 5.13 | 639 | 19 | 2.94 | 810 | 45 | 3.02 | 806 | 46 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-7/9 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-11 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | 5,120 | 283 | 3.02 | 4,130 | 237 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-12/13 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-14 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-15 | 5.06 | | 0 | 5.13 | 1,430 | 42 | 2.94 | 779 | 43 | 3.02 | 819 | 47 | 6.02 | 783 | 3.94 | 5.99 | 706 | 3.63 |
| PCB-16/32 | 5.06 | 1,840 | 59 | 5.13 | 2,250 | 66 | 2.94 | 2,920 | 162 | 3.02 | 3,680 | 211 | 6.02 | 2,260 | 11.4 | 5.99 | 2,180 | 11.2 |
| PCB-17 | 5.06 | 1,250 | 40 | 5.13 | 1,670 | 49 | 2.94 | 2,450 | 136 | 3.02 | 3,360 | 193 | 6.02 | 1,470 | 7.40 | 5.99 | 1,400 | 7.19 |
| PCB-18 | 5.06 | 2,590 | 84 | 5.13 | 2,970 | 87 | 2.94 | 2,820 | 156 | 3.02 | 3,560 | 204 | 6.02 | 2,890 | 14.6 | 5.99 | 2,830 | 14.5 |
| PCB-19 | 5.06 | 420 | 14 | 5.13 | 564 | 16 | 2.94 | 827 | 46 | 3.02 | 933 | 54 | 6.02 | 568 | 2.86 | 5.99 | 581 | 2.99 |
| PCB-20/21/33 | 5.06 | | 0 | 5.13 | 2,230 | 65 | 2.94 | 1,670 | 92 | 3.02 | 1,170 | 67 | 6.02 | 1,130 | 5.69 | 5.99 | 1,050 | 5.39 |
| PCB-22 | 5.06 | 1,140 | 37 | 5.13 | 1,960 | 57 | 2.94 | 1,710 | 95 | 3.02 | 1,100 | 63 | 6.02 | 912 | 4.59 | 5.99 | 679 | 3.49 |
| PCB-23 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-24/27 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | 467 | 26 | 3.02 | 605 | 35 | 6.02 | 315 | 1.59 | 5.99 | 305 | 1.57 |
| PCB-25 | 5.06 | 480 | 16 | 5.13 | 4,100 | 120 | 2.94 | 919 | 51 | 3.02 | 1,060 | 61 | 6.02 | 369 | 1.86 | 5.99 | 344 | 1.77 |
| PCB-26 | 5.06 | 701 | 23 | 5.13 | 2,680 | 78 | 2.94 | 1,080 | 60 | 3.02 | 950 | 54 | 6.02 | 608 | 3.06 | 5.99 | 446 | 2.29 |
| PCB-28 | 5.06 | 3,310 | 107 | 5.13 | 15,100 | 441 | 2.94 | 5,920 | 328 | 3.02 | 4,500 | 258 | 6.02 | 2,620 | 13.2 | 5.99 | 2,880 | 14.8 |
| PCB-29 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-30 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-31 | 5.06 | 2,970 | 96 | 5.13 | 9,100 | 266 | 2.94 | 4,580 | 254 | 3.02 | 3,710 | 213 | 6.02 | 2,280 | 11.48 | 5.99 | 2,260 | 11.61 |
| PCB-34 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-35 | 5.06 | 204 | 7 | 5.13 | 242 | 7 | 2.94 | 267 | 15 | 3.02 | 211 | 12 | 6.02 | | 0 | 5.99 | 244 | 1.25 |
| PCB-36 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-37 | 5.06 | | 0 | 5.13 | 2,050 | 60 | 2.94 | 1,620 | 90 | 3.02 | 1,070 | 61 | 6.02 | 695 | 3.50 | 5.99 | 861 | 4.42 |
| PCB-38 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-39 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-40 | 5.06 | 718 | 23 | 5.13 | 1,030 | 30 | 2.94 | 1,080 | 60 | 3.02 | 771 | 44 | 6.02 | 835 | 4.21 | 5.99 | 769 | 3.95 |
| PCB-41/64/71/72 | 5.06 | 3,360 | 109 | 5.13 | 5,090 | 149 | 2.94 | 5,330 | 295 | 3.02 | 3,960 | 227 | 6.02 | 4,210 | 21.2 | 5.99 | 3,810 | 19.6 |
| PCB-42/59 | 5.06 | 1,210 | 39 | 5.13 | 2,380 | 69 | 2.94 | 1,990 | 110 | 3.02 | 1,470 | 84 | 6.02 | 1,350 | 6.80 | 5.99 | 1,260 | 6.47 |
| PCB-43/49 | 5.06 | 2,970 | 96 | 5.13 | 9,130 | 266 | 2.94 | 5,450 | 302 | 3.02 | 4,130 | 237 | 6.02 | 4,070 | 20.5 | 5.99 | 3,640 | 18.7 |
| PCB-44 | 5.06 | 3,890 | 126 | 5.13 | 6,390 | 186 | 2.94 | 5,720 | 317 | 3.02 | 4,390 | 252 | 6.02 | 5,490 | 27.7 | 5.99 | 4,830 | 24.8 |
| PCB-45 | 5.06 | 611 | 20 | 5.13 | 755 | 22 | 2.94 | 767 | 42 | 3.02 | 534 | 31 | 6.02 | 693 | 3.49 | 5.99 | 557 | 2.86 |
| PCB-46 | 5.06 | 303 | 10 | 5.13 | 450 | 13 | 2.94 | 523 | 29 | 3.02 | 416 | 24 | 6.02 | 325 | 1.64 | 5.99 | 301 | 1.55 |
| PCB-47 | 5.06 | | 0 | 5.13 | 5,580 | 163 | 2.94 | 2,690 | 149 | 3.02 | 2,140 | 123 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-48/75 | 5.06 | 677 | 22 | 5.13 | 1,110 | 32 | 2.94 | 685 | 38 | 3.02 | 523 | 30 | 6.02 | 755 | 3.80 | 5.99 | 694 | 3.57 |
| PCB-50 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-51 | 5.06 | | 0 | 5.13 | 522 | 15 | 2.94 | 560 | 31 | 3.02 | 436 | 25 | 6.02 | 316 | 1.59 | 5.99 | 244 | 1.25 |
| PCB-52/69 | 5.06 | 4,780 | 154 | 5.13 | 8,660 | 253 | 2.94 | 6,570 | 364 | 3.02 | 5,220 | 299 | 6.02 | 8,120 | 40.9 | 5.99 | 7,500 | 38.5 |
| PCB-53 | 5.06 | 596 | 19 | 5.13 | 966 | 28 | 2.94 | 1,170 | 65 | 3.02 | 819 | 47 | 6.02 | 736 | 3.71 | 5.99 | 658 | 3.38 |
| PCB-54 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-55 | 5.06 | | 0 | 5.13 | 103 | 3 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-56/60 | 5.06 | 2,400 | 78 | 5.13 | 3,320 | 97 | 2.94 | 4,400 | 244 | 3.02 | 2,830 | 162 | 6.02 | 3,180 | 16.0 | 5.99 | 3,160 | 16.2 |

**Table B-3**
**HSM Particulate Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| | HSM Particulate Sample Collection | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Event 2 Attempt 2 (12-7 PR135) | | | | | | Event 1 Attempt 3 (4-30 PR146) | | | | | | Event 1 Attempt 1 (6-10-13 PR106) | | | | | |
| | PR1CSOCLYHP-02B | | | PR1HPDUP-02B | | | PR1CSOCLYHP-01C | | | PR1HPDUP-01C | | | PR1CSOCLYHP-01A | | | PR1HPDUP-01A | | |
| Wet weight (gram) | 13.9 | | | 15.6 | | | 5.85 | | | 5.8 | | | 20.4 | | | 19.9 | | |
| % solids | 36.4 | | | 32.9 | | | 50.2 | | | 52.0 | | | 29.5 | | | 30.1 | | |
| **Compound Identified** | **Weight gram (dry)** | **Sample Result pg/g** | **Converted Sample Result pg/L** | **Weight gram (dry)** | **Sample Result pg/g** | **Converted Sample Result pg/L** | **Weight gram (dry)** | **Sample Result pg/g** | **Converted Sample Result pg/L** | **Weight gram (dry)** | **Sample Result pg/g** | **Converted Sample Result pg/L** | **Weight gram (dry)** | **Sample Result pg/g** | **Converted Sample Result pg/L** | **Weight gram (dry)** | **Sample Result pg/g** | **Converted Sample Result pg/L** |
| PCB-57 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-58 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-61/70 | 5.06 | 4,540 | 147 | 5.13 | 7,700 | 225 | 2.94 | 6,590 | 365 | 3.02 | 5,030 | 288 | 6.02 | 8,380 | 42.2 | 5.99 | 7,940 | 40.8 |
| PCB-62 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-63 | 5.06 | 153 | 5 | 5.13 | 670 | 20 | 2.94 | 330 | 18 | 3.02 | | 0 | 6.02 | 270 | 1.36 | 5.99 | | 0 |
| PCB-65 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-67 | 5.06 | 113 | 4 | 5.13 | 240 | 7 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-68 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-73 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-74 | 5.06 | 1,450 | 47 | 5.13 | 3,490 | 102 | 2.94 | 2,340 | 130 | 3.02 | 1,720 | 99 | 6.02 | 2,360 | 11.9 | 5.99 | 2,180 | 11.2 |
| PCB-76/66 | 5.06 | 3,020 | 98 | 5.13 | 7,430 | 217 | 2.94 | 6,080 | 337 | 3.02 | 4,020 | 231 | 6.02 | 5,110 | 25.7 | 5.99 | 5,000 | 25.7 |
| PCB-77 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | 856 | 47 | 3.02 | 563 | 32 | 6.02 | 924 | 4.65 | 5.99 | 1,010 | 5.19 |
| PCB-78 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-79 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | 251 | 1.26 | 5.99 | 253 | 1.30 |
| PCB-80 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-81 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-82 | 5.06 | 1,170 | 38 | 5.13 | 1,470 | 43 | 2.94 | 1,550 | 86 | 3.02 | 1,210 | 69 | 6.02 | 2,890 | 14.6 | 5.99 | 2,690 | 13.8 |
| PCB-83 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-84/92 | 5.06 | 3,580 | 116 | 5.13 | 4,720 | 138 | 2.94 | 4,010 | 222 | 3.02 | 3,420 | 196 | 6.02 | 8,330 | 42.0 | 5.99 | 8,250 | 42.4 |
| PCB-85/116 | 5.06 | 1,400 | 45 | 5.13 | 1,760 | 51 | 2.94 | 1,980 | 110 | 3.02 | 1,410 | 81 | 6.02 | 2,690 | 13.5 | 5.99 | 2,560 | 13.2 |
| PCB-86 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-87/117/125 | 5.06 | 3,400 | 110 | 5.13 | 4,290 | 125 | 2.94 | 3,780 | 209 | 3.02 | 3,150 | 181 | 6.02 | 8,010 | 40.3 | 5.99 | 7,820 | 40.2 |
| PCB-88/91 | 5.06 | 1,060 | 34 | 5.13 | 1,510 | 44 | 2.94 | 1,380 | 76 | 3.02 | 1,190 | 68 | 6.02 | 2,330 | 11.7 | 5.99 | 2,190 | 11.3 |
| PCB-89 | 5.06 | | 0 | 5.13 | 129 | 4 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-90/101 | 5.06 | 8,320 | 269 | 5.13 | 11,200 | 327 | 2.94 | 8,740 | 484 | 3.02 | 7,520 | 431 | 6.02 | 20,200 | 102 | 5.99 | 20,100 | 103 |
| PCB-93 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-94 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-95/98/102 | 5.06 | 5,790 | 187 | 5.13 | 7,820 | 228 | 2.94 | 6,140 | 340 | 3.02 | 5,440 | 312 | 6.02 | 14,000 | 70.5 | 5.99 | 12,300 | 63.2 |
| PCB-96 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-97 | 5.06 | 2,490 | 80 | 5.13 | 3,250 | 95 | 2.94 | 3,050 | 169 | 3.02 | 2,440 | 140 | 6.02 | 6,330 | 31.9 | 5.99 | 6,100 | 31.3 |
| PCB-99 | 5.06 | 3,280 | 106 | 5.13 | 4,780 | 140 | 2.94 | 4,060 | 225 | 3.02 | 3,330 | 191 | 6.02 | 7,960 | 40.1 | 5.99 | 7,950 | 40.8 |
| PCB-100 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-103 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-104 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-105 | 5.06 | 3,350 | 108 | 5.13 | 4,050 | 118 | 2.94 | 4,080 | 226 | 3.02 | 3,100 | 178 | 6.02 | 8,250 | 41.6 | 5.99 | 8,120 | 41.7 |
| PCB-106/118 | 5.06 | 7,890 | 255 | 5.13 | 10,500 | 306 | 2.94 | 9,370 | 519 | 3.02 | 7,530 | 432 | 6.02 | 20,100 | 101 | 5.99 | 21,000 | 108 |
| PCB-107/109 | 5.06 | 503 | 16 | 5.13 | 750 | 22 | 2.94 | 748 | 41 | 3.02 | 564 | 32 | 6.02 | 1,100 | 5.54 | 5.99 | 1,020 | 5.24 |
| PCB-108/112 | 5.06 | 403 | 13 | 5.13 | 524 | 15 | 2.94 | 494 | 27 | 3.02 | 406 | 23 | 6.02 | 935 | 4.71 | 5.99 | 893 | 4.59 |
| PCB-110 | 5.06 | 9,800 | 317 | 5.13 | 12,300 | 359 | 2.94 | 11,400 | 631 | 3.02 | 8,940 | 513 | 6.02 | 20,000 | 101 | 5.99 | 19,900 | 102 |
| PCB-111/115 | 5.06 | 183 | 6 | 5.13 | 192 | 6 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | 286 | 1.44 | 5.99 | 314 | 1.61 |
| PCB-113 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-114 | 5.06 | 175 | 6 | 5.13 | 213 | 6 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | 557 | 2.81 | 5.99 | 459 | 2.36 |
| PCB-119 | 5.06 | 142 | 5 | 5.13 | 240 | 7 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | 263 | 1.32 | 5.99 | 323 | 1.66 |
| PCB-120 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-121 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-122 | 5.06 | | 0 | 5.13 | 110 | 3 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-123 | 5.06 | 148 | 5 | 5.13 | 179 | 5 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | 301 | 1.52 | 5.99 | 322 | 1.65 |

**Table B-3**
**HSM Particulate Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| | HSM Particulate Sample Collection | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Event 2 Attempt 2 (12-7 PR135) | | | | | | Event 1 Attempt 3 (4-30 PR146) | | | | | | Event 1 Attempt 1 (6-10-13 PR106) | | | | | |
| | PR1CSOCLYHP-02B | | | PR1HPDUP-02B | | | PR1CSOCLYHP-01C | | | PR1HPDUP-01C | | | PR1CSOCLYHP-01A | | | PR1HPDUP-01A | | |
| Wet weight (gram) | 13.9 | | | 15.6 | | | 5.85 | | | 5.8 | | | 20.4 | | | 19.9 | | |
| % solids | 36.4 | | | 32.9 | | | 50.2 | | | 52.0 | | | 29.5 | | | 30.1 | | |
| **Compound Identified** | Weight gram (dry) | Sample Result pg/g | Converted Sample Result pg/L | Weight gram (dry) | Sample Result pg/g | Converted Sample Result pg/L | Weight gram (dry) | Sample Result pg/g | Converted Sample Result pg/L | Weight gram (dry) | Sample Result pg/g | Converted Sample Result pg/L | Weight gram (dry) | Sample Result pg/g | Converted Sample Result pg/L | Weight gram (dry) | Sample Result pg/g | Converted Sample Result pg/L |
| PCB-124 | 5.06 | 379 | 12 | 5.13 | 464 | 14 | 2.94 | 475 | 26 | 3.02 | 364 | 21 | 6.02 | 960 | 4.84 | 5.99 | 969 | 4.98 |
| PCB-126 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | 261 | 1.31 | 5.99 | 278 | 1.43 |
| PCB-127 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-128/162 | 5.06 | 1,880 | 61 | 5.13 | 2,320 | 68 | 2.94 | 2,110 | 117 | 3.02 | 1,760 | 101 | 6.02 | 5,210 | 26.2 | 5.99 | 5,050 | 25.9 |
| PCB-129 | 5.06 | 590 | 19 | 5.13 | 741 | 22 | 2.94 | 636 | 35 | 3.02 | 475 | 27 | 6.02 | 1,740 | 8.76 | 5.99 | 1,670 | 8.58 |
| PCB-130 | 5.06 | 666 | 22 | 5.13 | 868 | 25 | 2.94 | 757 | 42 | 3.02 | 584 | 33 | 6.02 | 1,720 | 8.66 | 5.99 | 1,600 | 8.22 |
| PCB-131 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-132/161 | 5.06 | 2,890 | 93 | 5.13 | 3,480 | 102 | 2.94 | 3,090 | 171 | 3.02 | 2,750 | 158 | 6.02 | 7,190 | 36.2 | 5.99 | 7,060 | 36.3 |
| PCB-133/142 | 5.06 | 304 | 10 | 5.13 | 374 | 11 | 2.94 | 309 | 17 | 3.02 | 261 | 15 | 6.02 | 748 | 3.77 | 5.99 | 775 | 3.98 |
| PCB-134/143 | 5.06 | 537 | 17 | 5.13 | 689 | 20 | 2.94 | 611 | 34 | 3.02 | 481 | 28 | 6.02 | 1,480 | 7.45 | 5.99 | 1,540 | 7.91 |
| PCB-135 | 5.06 | 1,180 | 38 | 5.13 | 1,520 | 44 | 2.94 | 1,350 | 75 | 3.02 | 1,310 | 75 | 6.02 | 2,020 | 10.2 | 5.99 | 1,990 | 10.2 |
| PCB-136 | 5.06 | 1,110 | 36 | 5.13 | 1,460 | 43 | 2.94 | 1,180 | 65 | 3.02 | 1,070 | 61 | 6.02 | 1,880 | 9.47 | 5.99 | 1,990 | 10.2 |
| PCB-137 | 5.06 | 460 | 15 | 5.13 | 665 | 19 | 2.94 | 634 | 35 | 3.02 | 406 | 23 | 6.02 | 854 | 4.30 | 5.99 | 1,300 | 6.68 |
| PCB-138/163/164 | 5.06 | 10,100 | 326 | 5.13 | 12,300 | 359 | 2.94 | 11,700 | 648 | 3.02 | 9,580 | 549 | 6.02 | 25,100 | 126 | 5.99 | 24,300 | 125 |
| PCB-139/149 | 5.06 | 6,730 | 217 | 5.13 | 8,730 | 255 | 2.94 | 8,060 | 446 | 3.02 | 7,260 | 416 | 6.02 | 13,700 | 69.0 | 5.99 | 13,200 | 67.8 |
| PCB-140 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0.000 | 5.99 | | 0 |
| PCB-141 | 5.06 | 1,870 | 60 | 5.13 | 2,340 | 68 | 2.94 | 2,240 | 124 | 3.02 | 1,950 | 112 | 6.02 | 4,640 | 23.4 | 5.99 | 4,540 | 23.3 |
| PCB-144 | 5.06 | 448 | 14 | 5.13 | 507 | 15 | 2.94 | 477 | 26 | 3.02 | 402 | 23 | 6.02 | 873 | 4.40 | 5.99 | 676 | 3.47 |
| PCB-145 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-146/165 | 5.06 | 1,140 | 37 | 5.13 | 1,400 | 41 | 2.94 | 1,240 | 69 | 3.02 | 1,100 | 63 | 6.02 | 2,500 | 12.6 | 5.99 | 2,530 | 13.0 |
| PCB-147 | 5.06 | 170 | 5 | 5.13 | 270 | 8 | 2.94 | 216 | 12 | 3.02 | | 0 | 6.02 | 273 | 1.38 | 5.99 | 297 | 1.53 |
| PCB-148 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-150 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-151 | 5.06 | 1,850 | 60 | 5.13 | 2,250 | 66 | 2.94 | 2,100 | 116 | 3.02 | 1,930 | 111 | 6.02 | 2,960 | 14.9 | 5.99 | 3,120 | 16.0 |
| PCB-152 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-153 | 5.06 | 7,950 | 257 | 5.13 | 9,230 | 269 | 2.94 | 9,110 | 504 | 3.02 | 7,790 | 447 | 6.02 | 16,700 | 84.1 | 5.99 | 18,200 | 93.5 |
| PCB-154 | 5.06 | | 0 | 5.13 | 123 | 4 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-155 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-156 | 5.06 | 1,070 | 35 | 5.13 | 1,350 | 39 | 2.94 | 1,250 | 69 | 3.02 | 1,010 | 58 | 6.02 | 3,140 | 15.8 | 5.99 | 3,050 | 15.7 |
| PCB-157 | 5.06 | 269 | 9 | 5.13 | 354 | 10 | 2.94 | 336 | 19 | 3.02 | 271 | 16 | 6.02 | 758 | 3.82 | 5.99 | 711 | 3.65 |
| PCB-158/160 | 5.06 | 1,220 | 39 | 5.13 | 1,520 | 44 | 2.94 | 1,410 | 78 | 3.02 | 1,100 | 63 | 6.02 | 2,950 | 14.9 | 5.99 | 3,050 | 15.7 |
| PCB-159 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-166 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-167 | 5.06 | 436 | 14 | 5.13 | 537 | 16 | 2.94 | 527 | 29 | 3.02 | 442 | 25 | 6.02 | 1,360 | 6.85 | 5.99 | 1,300 | 6.68 |
| PCB-168 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-169 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-170 | 5.06 | 2,600 | 84 | 5.13 | 2,800 | 82 | 2.94 | 2,900 | 161 | 3.02 | 2,900 | 166 | 6.02 | 5,570 | 28.1 | 5.99 | 5,170 | 26.6 |
| PCB-171 | 5.06 | 658 | 21 | 5.13 | 716 | 21 | 2.94 | 826 | 46 | 3.02 | 677 | 39 | 6.02 | 1,420 | 7.15 | 5.99 | 1,360 | 6.99 |
| PCB-172 | 5.06 | 444 | 14 | 5.13 | 505 | 15 | 2.94 | 589 | 33 | 3.02 | 558 | 32 | 6.02 | 833 | 4.20 | 5.99 | 773 | 3.97 |
| PCB-173 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-174 | 5.06 | 2,470 | 80 | 5.13 | 2,680 | 78 | 2.94 | 3,010 | 167 | 3.02 | 2,740 | 157 | 6.02 | 5,140 | 25.9 | 5.99 | 4,970 | 25.5 |
| PCB-175 | 5.06 | 116 | 4 | 5.13 | 137 | 4 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-176 | 5.06 | 320 | 10 | 5.13 | 352 | 10 | 2.94 | 354 | 20 | 3.02 | 308 | 18 | 6.02 | 608 | 3.06 | 5.99 | 547 | 2.81 |
| PCB-177 | 5.06 | 1,500 | 48 | 5.13 | 1,590 | 46 | 2.94 | 1,700 | 94 | 3.02 | 1,670 | 96 | 6.02 | 3,180 | 16.0 | 5.99 | 3,020 | 15.5 |
| PCB-178 | 5.06 | 552 | 18 | 5.13 | 653 | 19 | 2.94 | 719 | 40 | 3.02 | 666 | 38 | 6.02 | 877 | 4.42 | 5.99 | 936 | 4.81 |
| PCB-179 | 5.06 | 1,150 | 37 | 5.13 | 1,250 | 36 | 2.94 | 1,320 | 73 | 3.02 | 1,250 | 72 | 6.02 | 2,030 | 10.2 | 5.99 | 1,920 | 9.86 |
| PCB-180 | 5.06 | 5,600 | 181 | 5.13 | 6,220 | 182 | 2.94 | 6,910 | 382 | 3.02 | 6,430 | 369 | 6.02 | 11,400 | 57.4 | 5.99 | 11,500 | 59.1 |

**Table B-3**
**HSM Particulate Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| | HSM Particulate Sample Collection | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Event 2 Attempt 2 (12-7 PR135) | | | | | | Event 1 Attempt 3 (4-30 PR146) | | | | | | Event 1 Attempt 1 (6-10-13 PR106) | | | | | |
| | PR1CSOCLYHP-02B | | | PR1HPDUP-02B | | | PR1CSOCLYHP-01C | | | PR1HPDUP-01C | | | PR1CSOCLYHP-01A | | | PR1HPDUP-01A | | |
| Wet weight (gram) | 13.9 | | | 15.6 | | | 5.85 | | | 5.8 | | | 20.4 | | | 19.9 | | |
| % solids | 36.4 | | | 32.9 | | | 50.2 | | | 52.0 | | | 29.5 | | | 30.1 | | |
| **Compound Identified** | **Weight gram (dry)** | **Sample Result pg/g** | **Converted Sample Result pg/L** | **Weight gram (dry)** | **Sample Result pg/g** | **Converted Sample Result pg/L** | **Weight gram (dry)** | **Sample Result pg/g** | **Converted Sample Result pg/L** | **Weight gram (dry)** | **Sample Result pg/g** | **Converted Sample Result pg/L** | **Weight gram (dry)** | **Sample Result pg/g** | **Converted Sample Result pg/L** | **Weight gram (dry)** | **Sample Result pg/g** | **Converted Sample Result pg/L** |
| PCB-181 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-182/187 | 5.06 | 3,410 | 110 | 5.13 | 3,790 | 111 | 2.94 | 4,150 | 230 | 3.02 | 3,730 | 214 | 6.02 | 4,870 | 24.5 | 5.99 | 5,030 | 25.8 |
| PCB-183 | 5.06 | 1,440 | 47 | 5.13 | 1,710 | 50 | 2.94 | 1,890 | 105 | 3.02 | 1,690 | 97 | 6.02 | 2,260 | 11.4 | 5.99 | 2,290 | 11.8 |
| PCB-184 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-185 | 5.06 | 317 | 10 | 5.13 | 333 | 10 | 2.94 | 361 | 20 | 3.02 | 320 | 18 | 6.02 | 519 | 2.61 | 5.99 | 532 | 2.73 |
| PCB-186 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-188 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-189 | 5.06 | 116 | 4 | 5.13 | 118 | 3 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | 251 | 1.29 |
| PCB-190 | 5.06 | 468 | 15 | 5.13 | 552 | 16 | 2.94 | 585 | 32 | 3.02 | 492 | 28 | 6.02 | 1,060 | 5.34 | 5.99 | 1,010 | 5.19 |
| PCB-191 | 5.06 | | 0 | 5.13 | 113 | 3 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-192 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-193 | 5.06 | 283 | 9 | 5.13 | 276 | 8 | 2.94 | 309 | 17 | 3.02 | 331 | 19 | 6.02 | 510 | 2.57 | 5.99 | 484 | 2.49 |
| PCB-194 | 5.06 | 1,580 | 51 | 5.13 | 1,480 | 43 | 2.94 | 1,710 | 95 | 3.02 | 1,430 | 82 | 6.02 | 2,540 | 12.8 | 5.99 | 2,420 | 12.4 |
| PCB-195 | 5.06 | 647 | 21 | 5.13 | 707 | 21 | 2.94 | 667 | 37 | 3.02 | 610 | 35 | 6.02 | 1,310 | 6.60 | 5.99 | 1,050 | 5.39 |
| PCB-196/203 | 5.06 | 1,840 | 59 | 5.13 | 1,820 | 53 | 2.94 | 1,900 | 105 | 3.02 | 1,800 | 103 | 6.02 | 1,900 | 9.57 | 5.99 | 2,080 | 10.7 |
| PCB-197 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-198 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-199 | 5.06 | 1,940 | 63 | 5.13 | 1,750 | 51 | 2.94 | 1,870 | 104 | 3.02 | 1,970 | 113 | 6.02 | 2,060 | 10.4 | 5.99 | 2,110 | 10.8 |
| PCB-200 | 5.06 | 203 | 7 | 5.13 | 242 | 7 | 2.94 | 263 | 15 | 3.02 | 217 | 12 | 6.02 | | 0 | 5.99 | 292 | 1.50 |
| PCB-201 | 5.06 | 230 | 7 | 5.13 | 227 | 7 | 2.94 | 244 | 14 | 3.02 | 234 | 13 | 6.02 | 353 | 1.78 | 5.99 | 287 | 1.47 |
| PCB-202 | 5.06 | 450 | 15 | 5.13 | 410 | 12 | 2.94 | 414 | 23 | 3.02 | 430 | 25 | 6.02 | 561 | 2.83 | 5.99 | 587 | 3.02 |
| PCB-204 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-205 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-206 | 5.06 | 2,250 | 73 | 5.13 | 1,420 | 41 | 2.94 | 1,430 | 79 | 3.02 | 1,210 | 69 | 6.02 | 1,930 | 9.72 | 5.99 | 2,110 | 10.8 |
| PCB-207 | 5.06 | 238 | 8 | 5.13 | | 0 | 2.94 | | 0 | 3.02 | | 0 | 6.02 | | 0 | 5.99 | | 0 |
| PCB-208 | 5.06 | 749 | 24 | 5.13 | 441 | 13 | 2.94 | 498 | 28 | 3.02 | 412 | 24 | 6.02 | 608 | 3.06 | 5.99 | 621 | 3.19 |
| PCB-209 | 5.06 | | 0 | 5.13 | | 0 | 2.94 | 1,130 | 63 | 3.02 | 1,080 | 62 | 6.02 | 1,410 | 7.10 | 5.99 | 1,380 | 7.09 |

**Abbreviations**
pg/L = picograms per liter
pg/g = picograms per gram

**Table B-4**
**HSM Dissolved Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| | HSM Dissolved Sample Collection | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Event 2 Attempt 2 (12 -7 PR138) | | | | | | Event 1 Attempt 3 (4-30 PR147) | | | | | | Event 1 Attempt 1 (6-10-13 PR107) | | | | | |
| | PR1CSOCLYHD-02B | | | PR1HDDUP-02B | | | PR1CSOCLYHD-01C | | | PR1HDDUP-01C | | | PR1CSOCLYHD-01A | | | PR1HDDUP-01A | | |
| Compound Identified | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg |
| PCB-1 | 5.01 | 18.4 | 92 | 4.9 | 19.3 | 95 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-2 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-3 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-4/10 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-5/8 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-6 | 5.01 | 25.3 | 127 | 4.9 | 25.7 | 126 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-7/9 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-11 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-12/13 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-14 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-15 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-16/32 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-17 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-18 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-19 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-20/21/33 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-22 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-23 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-24/27 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-25 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | 43.6 | 212 | 4.9 | 44.7 | 219 |
| PCB-26 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-28 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-29 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-30 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-31 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-34 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-35 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-36 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-37 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-38 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-39 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-40 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-41/64/71/72 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | 215 | 1045 | 4.9 | 207 | 1014 |
| PCB-42/59 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-43/49 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | 195 | 948 | 4.9 | 203 | 995 |
| PCB-44 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | 0 | 0 | 4.9 | 251 | 1230 |
| PCB-45 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-46 | 5.01 | 0 | 0 | 4.9 | 10.2 | 50 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-47 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-48/75 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-50 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-51 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-52/69 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | 346 | 1682 | 4.9 | 362 | 1774 |
| PCB-53 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | 0 | 0 | 4.9 | 53.7 | 263 |
| PCB-54 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-55 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-56/60 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | 129 | 627 | 4.9 | 128 | 627 |

**Table B-4**
**HSM Dissolved Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| | HSM Dissolved Sample Collection | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Event 2 Attempt 2 (12-7 PR138) | | | | | | Event 1 Attempt 3 (4-30 PR147) | | | | | | Event 1 Attempt 1 (6-10-13 PR107) | | | | | |
| | PR1CSOCLYHD-02B | | | PR1HDDUP-02B | | | PR1CSOCLYHD-01C | | | PR1HDDUP-01C | | | PR1CSOCLYHD-01A | | | PR1HDDUP-01A | | |
| Compound Identified | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg |
| PCB-57 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-58 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-61/70 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | 309 | 1502 | 4.9 | 296 | 1450 |
| PCB-62 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-63 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-65 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-67 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-68 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-73 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-74 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | 102 | 496 | 4.9 | 96.8 | 474 |
| PCB-76/66 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | 207 | 1006 | 4.9 | 213 | 1044 |
| PCB-77 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-78 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-79 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-80 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-81 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-82 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | 18.4 | 91 | 5.02 | 18.5 | 93 | 4.86 | 58.3 | 283 | 4.9 | 70.6 | 346 |
| PCB-83 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-84/92 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | 197 | 957 | 4.9 | 208 | 1019 |
| PCB-85/116 | 5.01 | 25.6 | 128 | 4.9 | 24.1 | 118 | 4.92 | 21.9 | 108 | 5.02 | 22.9 | 115 | 4.86 | 47.6 | 231 | 4.9 | 58.6 | 287 |
| PCB-86 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-87/117/125 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | 50.6 | 249 | 5.02 | | 0 | 4.86 | 193 | 938 | 4.9 | 195 | 956 |
| PCB-88/91 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | 21.9 | 108 | 5.02 | 19.7 | 99 | 4.86 | 54.2 | 263 | 4.9 | 61.1 | 299 |
| PCB-89 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-90/101 | 5.01 | 189 | 947 | 4.9 | 193 | 946 | 4.92 | 0 | 0 | 5.02 | 129 | 648 | 4.86 | 466 | 2265 | 4.9 | 488 | 2391 |
| PCB-93 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-94 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-95/98/102 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-96 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-97 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | 156 | 758 | 4.9 | 151 | 740 |
| PCB-99 | 5.01 | 66 | 331 | 4.9 | 66.3 | 325 | 4.92 | 52.6 | 259 | 5.02 | 55.7 | 280 | 4.86 | 177 | 860 | 4.9 | 185 | 907 |
| PCB-100 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-103 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-104 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-105 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | 44.6 | 219 | 5.02 | 43.9 | 220 | 4.86 | 177 | 860 | 4.9 | 182 | 892 |
| PCB-106/118 | 5.01 | 0 | 0 | 4.9 | 144 | 706 | 4.92 | 123 | 605 | 5.02 | 105 | 527 | 4.86 | 401 | 1949 | 4.9 | 405 | 1985 |
| PCB-107/109 | 5.01 | 10.8 | 54 | 4.9 | 10.9 | 53 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | 22.3 | 108 | 4.9 | 0 | 0 |
| PCB-108/112 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | 22.7 | 110 | 4.9 | 24.9 | 122 |
| PCB-110 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | 149 | 733 | 5.02 | 146 | 733 | 4.86 | 423 | 2056 | 4.9 | 457 | 2239 |
| PCB-111/115 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-113 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-114 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-119 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-120 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-121 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-122 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-123 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |

**Table B-4**
**HSM Dissolved Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| | HSM Dissolved Sample Collection | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Event 2 Attempt 2 (12-7 PR138) | | | | | | Event 1 Attempt 3 (4-30 PR147) | | | | | | Event 1 Attempt 1 (6-10-13 PR107) | | | | | |
| | PR1CSOCLYHD-02B | | | PR1HDDUP-02B | | | PR1CSOCLYHD-01C | | | PR1HDDUP-01C | | | PR1CSOCLYHD-01A | | | PR1HDDUP-01A | | |
| Compound Identified | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg |
| PCB-124 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-126 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-127 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-128/162 | 5.01 | 27.8 | 139 | 4.9 | 27.6 | 135 | 4.92 | 21.9 | 108 | 5.02 | 20.7 | 104 | 4.86 | 82.2 | 399 | 4.9 | 81.6 | 400 |
| PCB-129 | 5.01 | 0 | 0 | 4.9 | 10.8 | 53 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | 33.6 | 163 | 4.9 | 27.8 | 136 |
| PCB-130 | 5.01 | 10.4 | 52 | 4.9 | 10.9 | 53 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | 25.7 | 125 | 4.9 | 0 | 0 |
| PCB-131 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-132/161 | 5.01 | 42.2 | 211 | 4.9 | 47 | 230 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | 122 | 593 | 4.9 | 128 | 627 |
| PCB-133/142 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-134/143 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | 29.8 | 145 | 4.9 | 32.1 | 157 |
| PCB-135 | 5.01 | 19.9 | 100 | 4.9 | 20.3 | 99 | 4.92 | 19.1 | 94 | 5.02 | 20.7 | 104 | 4.86 | 48.2 | 234 | 4.9 | 43.5 | 213 |
| PCB-136 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | 21.6 | 106 | 5.02 | 17.6 | 88 | 4.86 | 41.9 | 204 | 4.9 | 40 | 196 |
| PCB-137 | 5.01 | 11.7 | 59 | 4.9 | 12.9 | 63 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-138/163/164 | 5.01 | 162 | 812 | 4.9 | 166 | 813 | 4.92 | 126 | 620 | 5.02 | 114 | 572 | 4.86 | 426 | 2070 | 4.9 | 426 | 2087 |
| PCB-139/149 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | 114 | 561 | 5.02 | 118 | 592 | 4.86 | 300 | 1458 | 4.9 | 249 | 1220 |
| PCB-140 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-141 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | 83.8 | 407 | 4.9 | 83 | 407 |
| PCB-144 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-145 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-146/165 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | 50.2 | 244 | 4.9 | 51.7 | 253 |
| PCB-147 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-148 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-150 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-151 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | 0 | 0 | 5.02 | 31.3 | 157 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-152 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-153 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | 108 | 531 | 5.02 | 101 | 507 | 4.86 | 360 | 1750 | 4.9 | 346 | 1695 |
| PCB-154 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-155 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-156 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | 12.8 | 63 | 5.02 | 10.8 | 54 | 4.86 | 46.7 | 227 | 4.9 | 44.1 | 216 |
| PCB-157 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-158/160 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | 48.3 | 235 | 4.9 | 53.5 | 262 |
| PCB-159 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-166 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-167 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-168 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-169 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-170 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | 31.1 | 153 | 5.02 | 29.4 | 148 | 4.86 | 92 | 447 | 4.9 | 101 | 495 |
| PCB-171 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | 23.5 | 114 | 4.9 | 0 | 0 |
| PCB-172 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-173 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-174 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | 31.6 | 155 | 5.02 | 32 | 161 | 4.86 | 94.3 | 458 | 4.9 | 102 | 500 |
| PCB-175 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-176 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-177 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | 19.1 | 94 | 5.02 | 18.6 | 93 | 4.86 | 55.8 | 271 | 4.9 | 48.9 | 240 |
| PCB-178 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-179 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-180 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |

**Table B-4**
**HSM Dissolved Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| | HSM Dissolved Sample Collection | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Event 2 Attempt 2 (12 -7 PR138) | | | | | | Event 1 Attempt 3 (4-30 PR147) | | | | | | Event 1 Attempt 1 (6-10-13 PR107) | | | | | |
| | PR1CSOCLYHD-02B | | | PR1HDDUP-02B | | | PR1CSOCLYHD-01C | | | PR1HDDUP-01C | | | PR1CSOCLYHD-01A | | | PR1HDDUP-01A | | |
| Compound Identified | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg |
| PCB-181 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-182/187 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | 47.8 | 235 | 5.02 | 44.2 | 222 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-183 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | 20.1 | 99 | 5.02 | 19.9 | 100 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-184 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-185 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-186 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-188 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-189 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-190 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-191 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-192 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-193 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-194 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | 14.7 | 72 | 5.02 | 15.3 | 77 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-195 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-196/203 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | 23 | 113 | 5.02 | 18.3 | 92 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-197 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-198 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-199 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | 19.4 | 95 | 5.02 | 17.9 | 90 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-200 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-201 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-202 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-204 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-205 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-206 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-207 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-208 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |
| PCB-209 | 5.01 | | 0 | 4.9 | | 0 | 4.92 | | 0 | 5.02 | | 0 | 4.86 | | 0 | 4.9 | | 0 |

**Abbreviations**
pg/L = picograms per liter

**Table B-5**
**LSM Particulate Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| | LSM Particulate Sample Collection | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Event 2 Attempt 2 (12-7 PR140) | | | | | | Event 1 Attempt 3 (4-30 PR149) | | | | | | Event 1 Attempt 1 (6-10-13 PR109) | | | | | |
| | PR1CSOCLYLP-02B | | | PR1LPDUP-02B | | | PR1CSOCLYLP-01C | | | PR1LPDUP-01C | | | PR1CSOCLYLP-01A | | | PR1LPDUP-01A | | |
| Total liters filtered (L) | 4.819 | | | 4.864 | | | 5.009 | | | 5.058 | | | 4.957 | | | 4.844 | | |
| **Compound Identified** | **Weight gram** | **Sample Result pg/g** | **Converted Sample Result pg/L** | **Weight gram** | **Sample Result pg/g** | **Converted Sample Result pg/L** | **Weight gram** | **Sample Result pg/g** | **Converted Sample Result pg/L** | **Weight gram** | **Sample Result pg/g** | **Converted Sample Result pg/L** | **Weight gram** | **Sample Result pg/g** | **Converted Sample Result pg/L** | **Weight gram** | **Sample Result pg/g** | **Converted Sample Result pg/L** |
| PCB-1 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-2 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-3 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-4/10 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | 1,230 | 45 | 0.305 | | 0 |
| PCB-5/8 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-6 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-7/9 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-11 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-12/13 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-14 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-15 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-16/32 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | 3,680 | 136 | 0.305 | 1,200 | 76 |
| PCB-17 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | 2,070 | 76 | 0.305 | 757 | 48 |
| PCB-18 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | 4,560 | 168 | 0.305 | 1,670 | 105 |
| PCB-19 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | 924 | 34 | 0.305 | 342 | 22 |
| PCB-20/21/33 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | 2,910 | 107 | 0.305 | 872 | 55 |
| PCB-22 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | 2,310 | 85 | 0.305 | 682 | 43 |
| PCB-23 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-24/27 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-25 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | 916 | 34 | 0.305 | | 0 |
| PCB-26 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | 1,390 | 51 | 0.305 | 462 | 29 |
| PCB-28 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | 6,420 | 237 | 0.305 | 1,990 | 125 |
| PCB-29 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-30 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-31 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | 6,260 | 231 | 0.305 | 1,890 | 119 |
| PCB-34 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-35 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 1,540 | 12 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-36 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-37 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | 1,850 | 68 | 0.305 | 556 | 35 |
| PCB-38 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-39 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-40 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 7,030 | 56 | 0.0405 | | 0 | 0.183 | 1,610 | 59 | 0.305 | 572 | 36 |
| PCB-41/64/71/72 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 31,700 | 254 | 0.0405 | | 0 | 0.183 | 8,520 | 315 | 0.305 | 2,680 | 169 |
| PCB-42/59 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 11,100 | 89 | 0.0405 | | 0 | 0.183 | 2,940 | 109 | 0.305 | 906 | 57 |
| PCB-43/49 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 34,100 | 273 | 0.0405 | | 0 | 0.183 | 7,790 | 288 | 0.305 | 2,500 | 157 |
| PCB-44 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 34,400 | 275 | 0.0405 | | 0 | 0.183 | 10,600 | 391 | 0.305 | 3,440 | 217 |
| PCB-45 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 5,830 | 47 | 0.0405 | | 0 | 0.183 | 1,290 | 48 | 0.305 | 386 | 24 |
| PCB-46 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 3,550 | 28 | 0.0405 | | 0 | 0.183 | 662 | 24 | 0.305 | | 0 |
| PCB-47 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 14,400 | 115 | 0.0405 | | 0 | 0.183 | 2,410 | 89 | 0.305 | | 0 |
| PCB-48/75 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 6,340 | 51 | 0.0405 | | 0 | 0.183 | 1,500 | 55 | 0.305 | 487 | 31 |
| PCB-50 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 1,300 | 10 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-51 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 2,900 | 23 | 0.0405 | | 0 | 0.183 | 667 | 25 | 0.305 | | 0 |
| PCB-52/69 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 45,200 | 362 | 0.0405 | | 0 | 0.183 | 15,500 | 572 | 0.305 | 5,110 | 322 |
| PCB-53 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 6,630 | 53 | 0.0405 | | 0 | 0.183 | 1,550 | 57 | 0.305 | 510 | 32 |
| PCB-54 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |

**Table B-5**
**LSM Particulate Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| | LSM Particulate Sample Collection | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Event 2 Attempt 2 (12-7 PR140) | | | | | | Event 1 Attempt 3 (4-30 PR149) | | | | | | Event 1 Attempt 1 (6-10-13 PR109) | | | | | |
| | PR1CSOCLYLP-02B | | | PR1LPDUP-02B | | | PR1CSOCLYLP-01C | | | PR1LPDUP-01C | | | PR1CSOCLYLP-01A | | | PR1LPDUP-01A | | |
| Total liters filtered (L) | 4.819 | | | 4.864 | | | 5.009 | | | 5.058 | | | 4.957 | | | 4.844 | | |
| **Compound Identified** | **Weight gram** | **Sample Result pg/g** | **Converted Sample Result pg/L** | **Weight gram** | **Sample Result pg/g** | **Converted Sample Result pg/L** | **Weight gram** | **Sample Result pg/g** | **Converted Sample Result pg/L** | **Weight gram** | **Sample Result pg/g** | **Converted Sample Result pg/L** | **Weight gram** | **Sample Result pg/g** | **Converted Sample Result pg/L** | **Weight gram** | **Sample Result pg/g** | **Converted Sample Result pg/L** |
| PCB-55 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-56/60 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 27,600 | 221 | 0.0405 | | 0 | 0.183 | 6,910 | 255 | 0.305 | 2,050 | 129 |
| PCB-57 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-58 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-61/70 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 45,500 | 364 | 0.0405 | | 0 | 0.183 | 15,700 | 580 | 0.305 | 4,930 | 310 |
| PCB-62 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-63 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 1,950 | 16 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-65 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-67 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-68 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-73 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-74 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 16,800 | 134 | 0.0405 | | 0 | 0.183 | 4,730 | 175 | 0.305 | 1,500 | 94 |
| PCB-76/66 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 35,700 | 286 | 0.0405 | | 0 | 0.183 | 10,700 | 395 | 0.305 | 3,220 | 203 |
| PCB-77 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 4,370 | 35 | 0.0405 | | 0 | 0.183 | 1,580 | 58 | 0.305 | 467 | 29 |
| PCB-78 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-79 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-80 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-81 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-82 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 8,130 | 65 | 0.0405 | 3,340 | 27 | 0.183 | 4,460 | 165 | 0.305 | 1,260 | 79 |
| PCB-83 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-84/92 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 23,700 | 190 | 0.0405 | 8,300 | 66 | 0.183 | 12,600 | 465 | 0.305 | 4,170 | 263 |
| PCB-85/116 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 9,720 | 78 | 0.0405 | 3,830 | 31 | 0.183 | 4,210 | 155 | 0.305 | 1,360 | 86 |
| PCB-86 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-87/117/125 | 0.041 | | 0 | 0.0657 | 7,180 | 97 | 0.0401 | 19,800 | 159 | 0.0405 | 8,330 | 67 | 0.183 | 11,500 | 425 | 0.305 | 3,710 | 234 |
| PCB-88/91 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 8,370 | 67 | 0.0405 | 3,320 | 27 | 0.183 | 3,680 | 136 | 0.305 | 1,210 | 76 |
| PCB-89 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-90/101 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 49,600 | 397 | 0.0405 | 20,400 | 163 | 0.183 | 30,700 | 1,133 | 0.305 | 10,300 | 649 |
| PCB-93 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-94 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-95/98/102 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 37,800 | 303 | 0.0405 | 15,200 | 122 | 0.183 | 20,900 | 772 | 0.305 | 7,250 | 456 |
| PCB-96 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-97 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 15,900 | 127 | 0.0405 | 6,290 | 50 | 0.183 | 9,390 | 347 | 0.305 | 2,890 | 182 |
| PCB-99 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 21,700 | 174 | 0.0405 | 8,040 | 64 | 0.183 | 11,200 | 413 | 0.305 | 3,690 | 232 |
| PCB-100 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-103 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-104 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-105 | 0.041 | | 0 | 0.0657 | 7,470 | 101 | 0.0401 | 18,300 | 147 | 0.0405 | 7,670 | 61 | 0.183 | 11,600 | 428 | 0.305 | 3,430 | 216 |
| PCB-106/118 | 0.041 | | 0 | 0.0657 | 16,800 | 227 | 0.0401 | 46,900 | 375 | 0.0405 | 19,500 | 156 | 0.183 | 29,000 | 1,071 | 0.305 | 9,100 | 573 |
| PCB-107/109 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 3,600 | 29 | 0.0405 | 1,570 | 13 | 0.183 | 1,750 | 65 | 0.305 | 592 | 37 |
| PCB-108/112 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 2,910 | 23 | 0.0405 | | 0 | 0.183 | 1,260 | 47 | 0.305 | 441 | 28 |
| PCB-110 | 0.041 | 23,800 | 202 | 0.0657 | | 0 | 0.0401 | 59,600 | 477 | 0.0405 | 25,500 | 204 | 0.183 | 31,200 | 1,152 | 0.305 | 10,200 | 642 |
| PCB-111/115 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 1,490 | 12 | 0.0405 | | 0 | 0.183 | 650 | 24 | 0.305 | | 0 |
| PCB-113 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-114 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 1,400 | 11 | 0.0405 | | 0 | 0.183 | 658 | 24 | 0.305 | | 0 |
| PCB-119 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |

**Table B-5**
**LSM Particulate Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| | LSM Particulate Sample Collection | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Event 2 Attempt 2 (12-7 PR140) | | | | | | Event 1 Attempt 3 (4-30 PR149) | | | | | | Event 1 Attempt 1 (6-10-13 PR109) | | | | | |
| | PR1CSOCLYLP-02B | | | PR1LPDUP-02B | | | PR1CSOCLYLP-01C | | | PR1LPDUP-01C | | | PR1CSOCLYLP-01A | | | PR1LPDUP-01A | | |
| Total liters filtered (L) | 4.819 | | | 4.864 | | | 5.009 | | | 5.058 | | | 4.957 | | | 4.844 | | |
| **Compound Identified** | **Weight gram** | **Sample Result pg/g** | **Converted Sample Result pg/L** | **Weight gram** | **Sample Result pg/g** | **Converted Sample Result pg/L** | **Weight gram** | **Sample Result pg/g** | **Converted Sample Result pg/L** | **Weight gram** | **Sample Result pg/g** | **Converted Sample Result pg/L** | **Weight gram** | **Sample Result pg/g** | **Converted Sample Result pg/L** | **Weight gram** | **Sample Result pg/g** | **Converted Sample Result pg/L** |
| PCB-120 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-121 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-122 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-123 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | 628 | 23 | 0.305 | | 0 |
| PCB-124 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 2,360 | 19 | 0.0405 | | 0 | 0.183 | 1,450 | 54 | 0.305 | 446 | 28 |
| PCB-126 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-127 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-128/162 | 0.041 | | 0 | 0.0657 | 4,140 | 56 | 0.0401 | 9,740 | 78 | 0.0405 | 4,220 | 34 | 0.183 | 6,490 | 240 | 0.305 | 1,940 | 122 |
| PCB-129 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 3,070 | 25 | 0.0405 | 1,500 | 12 | 0.183 | 2,170 | 80 | 0.305 | 573 | 36 |
| PCB-130 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 3,500 | 28 | 0.0405 | 1,620 | 13 | 0.183 | 2,310 | 85 | 0.305 | 665 | 42 |
| PCB-131 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-132/161 | 0.041 | | 0 | 0.0657 | 6,000 | 81 | 0.0401 | 14,000 | 112 | 0.0405 | 6,780 | 54 | 0.183 | 9,660 | 357 | 0.305 | 3,040 | 191 |
| PCB-133/142 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 1,790 | 14 | 0.0405 | | 0 | 0.183 | 962 | 36 | 0.305 | 352 | 22 |
| PCB-134/143 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 2,820 | 23 | 0.0405 | 1,270 | 10 | 0.183 | 1,880 | 69 | 0.305 | 531 | 33 |
| PCB-135 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 9,070 | 73 | 0.0405 | 4,160 | 33 | 0.183 | 2,970 | 110 | 0.305 | 966 | 61 |
| PCB-136 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 7,700 | 62 | 0.0405 | 3,630 | 29 | 0.183 | 2,890 | 107 | 0.305 | 947 | 60 |
| PCB-137 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 3,500 | 28 | 0.0405 | 1,350 | 11 | 0.183 | 1,790 | 66 | 0.305 | 615 | 39 |
| PCB-138/163/164 | 0.041 | | 0 | 0.0657 | 20,800 | 281 | 0.0401 | 56,500 | 452 | 0.0405 | 25,400 | 203 | 0.183 | 32,800 | 1,211 | 0.305 | 9,860 | 621 |
| PCB-139/149 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 51,100 | 409 | 0.0405 | 24,100 | 193 | 0.183 | 19,700 | 727 | 0.305 | 6,470 | 407 |
| PCB-140 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-141 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 12,400 | 99 | 0.0405 | 4,990 | 40 | 0.183 | 6,340 | 234 | 0.305 | 1,810 | 114 |
| PCB-144 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 3,280 | 26 | 0.0405 | 1,530 | 12 | 0.183 | 1,170 | 43 | 0.305 | 349 | 22 |
| PCB-145 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-146/165 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 6,530 | 52 | 0.0405 | 2,990 | 24 | 0.183 | 3,510 | 130 | 0.305 | 1,100 | 69 |
| PCB-147 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-148 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-150 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-151 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 15,500 | 124 | 0.0405 | 6,320 | 51 | 0.183 | 4,450 | 164 | 0.305 | 1,440 | 91 |
| PCB-152 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-153 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 50,400 | 403 | 0.0405 | 19,900 | 159 | 0.183 | 24,100 | 890 | 0.305 | 6,990 | 440 |
| PCB-154 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-155 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-156 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 6,020 | 48 | 0.0405 | 2,580 | 21 | 0.183 | 3,730 | 138 | 0.305 | 1,150 | 72 |
| PCB-157 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 1,550 | 12 | 0.0405 | | 0 | 0.183 | 885 | 33 | 0.305 | | 0 |
| PCB-158/160 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 6,810 | 55 | 0.0405 | 3,110 | 25 | 0.183 | 3,830 | 141 | 0.305 | 1,110 | 70 |
| PCB-159 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-166 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-167 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 2,430 | 19 | 0.0405 | | 0 | 0.183 | 1,430 | 53 | 0.305 | 476 | 30 |
| PCB-168 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-169 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-170 | 0.041 | | 0 | 0.0657 | 5,490 | 74 | 0.0401 | 17,600 | 141 | 0.0405 | 7,250 | 58 | 0.183 | 6,300 | 233 | 0.305 | 1,850 | 116 |
| PCB-171 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 4,560 | 37 | 0.0405 | 1,990 | 16 | 0.183 | 1,740 | 64 | 0.305 | 461 | 29 |
| PCB-172 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 3,370 | 27 | 0.0405 | 1,420 | 11 | 0.183 | 952 | 35 | 0.305 | | 0 |
| PCB-173 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-174 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 18,500 | 148 | 0.0405 | 6,750 | 54 | 0.183 | 6,990 | 258 | 0.305 | 1,840 | 116 |

Table B-5
LSM Particulate Analytical Results
Phase I Report Addendum – Additional Data Evaluation

| | LSM Particulate Sample Collection | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Event 2 Attempt 2 (12-7 PR140) | | | | | | Event 1 Attempt 3 (4-30 PR149) | | | | | | Event 1 Attempt 1 (6-10-13 PR109) | | | | | |
| | PR1CSOCLYLP-02B | | | PR1LPDUP-02B | | | PR1CSOCLYLP-01C | | | PR1LPDUP-01C | | | PR1CSOCLYLP-01A | | | PR1LPDUP-01A | | |
| Total liters filtered (L) | 4.819 | | | 4.864 | | | 5.009 | | | 5.058 | | | 4.957 | | | 4.844 | | |
| **Compound Identified** | **Weight gram** | **Sample Result pg/g** | **Converted Sample Result pg/L** | **Weight gram** | **Sample Result pg/g** | **Converted Sample Result pg/L** | **Weight gram** | **Sample Result pg/g** | **Converted Sample Result pg/L** | **Weight gram** | **Sample Result pg/g** | **Converted Sample Result pg/L** | **Weight gram** | **Sample Result pg/g** | **Converted Sample Result pg/L** | **Weight gram** | **Sample Result pg/g** | **Converted Sample Result pg/L** |
| PCB-175 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-176 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 2,560 | 20 | 0.0405 | | 0 | 0.183 | 731 | 27 | 0.305 | | 0 |
| PCB-177 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 10,200 | 82 | 0.0405 | 4,240 | 34 | 0.183 | 4,110 | 152 | 0.305 | 1,090 | 69 |
| PCB-178 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 5,090 | 41 | 0.0405 | 1,930 | 15 | 0.183 | 1,020 | 38 | 0.305 | | 0 |
| PCB-179 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 9,850 | 79 | 0.0405 | | 0 | 0.183 | 2,450 | 90 | 0.305 | 685 | 43 |
| PCB-180 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 42,700 | 342 | 0.0405 | 15,600 | 125 | 0.183 | 15,200 | 561 | 0.305 | 4,320 | 272 |
| PCB-181 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-182/187 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 30,800 | 247 | 0.0405 | 11,100 | 89 | 0.183 | 6,190 | 229 | 0.305 | 1,750 | 110 |
| PCB-183 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 12,400 | 99 | 0.0405 | 4,570 | 37 | 0.183 | 2,990 | 110 | 0.305 | 828 | 52 |
| PCB-184 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-185 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 2,500 | 20 | 0.0405 | | 0 | 0.183 | 694 | 26 | 0.305 | | 0 |
| PCB-186 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-188 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-189 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-190 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 3,410 | 27 | 0.0405 | 1,430 | 11 | 0.183 | 1,220 | 45 | 0.305 | 378 | 24 |
| PCB-191 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-192 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-193 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 1,960 | 16 | 0.0405 | | 0 | 0.183 | 685 | 25 | 0.305 | | 0 |
| PCB-194 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 11,200 | 90 | 0.0405 | 3,390 | 27 | 0.183 | 3,110 | 115 | 0.305 | 906 | 57 |
| PCB-195 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 4,570 | 37 | 0.0405 | | 0 | 0.183 | 1,160 | 43 | 0.305 | 342 | 22 |
| PCB-196/203 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 18,400 | 147 | 0.0405 | 4,910 | 39 | 0.183 | 3,260 | 120 | 0.305 | 825 | 52 |
| PCB-197 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-198 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-199 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 18,800 | 151 | 0.0405 | 5,080 | 41 | 0.183 | 2,730 | 101 | 0.305 | 736 | 46 |
| PCB-200 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 2,680 | 21 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-201 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 2,300 | 18 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-202 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 3,900 | 31 | 0.0405 | | 0 | 0.183 | 813 | 30 | 0.305 | | 0 |
| PCB-204 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-205 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-206 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 8,100 | 65 | 0.0405 | | 0 | 0.183 | 2,680 | 99 | 0.305 | | 0 |
| PCB-207 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | | 0 | 0.305 | | 0 |
| PCB-208 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | 2,590 | 21 | 0.0405 | | 0 | 0.183 | 1,000 | 37 | 0.305 | | 0 |
| PCB-209 | 0.041 | | 0 | 0.0657 | | 0 | 0.0401 | | 0 | 0.0405 | | 0 | 0.183 | 1,510 | 56 | 0.305 | 397 | 25 |

**Abbreviations**
pg/L = picograms per liter
pg/g = picograms per gram

**Table B-6**
**LSM Dissolved Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| | LSM Dissolved Sample Collection | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Event 2 Attempt 2 (12 -7 PR141) | | | | | | Event 1 Attempt 3 (4-30 PR150 ) | | | | | | Event 1 Attempt 1 (6-10-13 PR110) | | | | | |
| | PR1CSOCLYLD-02B | | | PR1LDDUP-02B | | | PR1CSOCLYLD-01C | | | PR1LDDUP-01C | | | PR1CSOCLYLD-01A | | | PR1LDDUP-01A | | |
| Compound Identified | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg |
| PCB-1 | 4.84 | 13.4 | 65 | 4.97 | 16.7 | 83 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-2 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-3 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-4/10 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | 120 | 623 | 5.11 | 129 | 659 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-5/8 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-6 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-7/9 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-11 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-12/13 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-14 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-15 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-16/32 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-17 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-18 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-19 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-20/21/33 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-22 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-23 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-24/27 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-25 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-26 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-28 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-29 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-30 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-31 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-34 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-35 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-36 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-37 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-38 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-39 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-40 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-41/64/71/72 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-42/59 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-43/49 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-44 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-45 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-46 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-47 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-48/75 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-50 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-51 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-52/69 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-53 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |

**Table B-6**
**LSM Dissolved Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| | LSM Dissolved Sample Collection | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Event 2 Attempt 2 (12 -7 PR141) | | | | | | Event 1 Attempt 3 (4-30 PR150 ) | | | | | | Event 1 Attempt 1 (6-10-13 PR110) | | | | | |
| | PR1CSOCLYLD-02B | | | PR1LDDUP-02B | | | PR1CSOCLYLD-01C | | | PR1LDDUP-01C | | | PR1CSOCLYLD-01A | | | PR1LDDUP-01A | | |
| Compound Identified | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg |
| PCB-54 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-55 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-56/60 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-57 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-58 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-61/70 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-62 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-63 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-65 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-67 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-68 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-73 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-74 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | 44.2 | 221 | 4.86 | 46.3 | 225 |
| PCB-76/66 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-77 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-78 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-79 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-80 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-81 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-82 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | 11.5 | 60 | 5.11 | 10.7 | 55 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-83 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-84/92 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-85/116 | 4.84 | 10.5 | 51 | 4.97 | 11.4 | 57 | 5.19 | 14.1 | 73 | 5.11 | 13.0 | 66 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-86 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-87/117/125 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-88/91 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | 13.0 | 67 | 5.11 | 12.5 | 64 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-89 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-90/101 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-93 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-94 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-95/98/102 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-96 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-97 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-99 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-100 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-103 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-104 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-105 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-106/118 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-107/109 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-108/112 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-110 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-111/115 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-113 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |

**Table B-6**
**LSM Dissolved Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| | LSM Dissolved Sample Collection | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Event 2 Attempt 2 (12 -7 PR141) | | | | | | Event 1 Attempt 3 (4-30 PR150 ) | | | | | | Event 1 Attempt 1 (6-10-13 PR110) | | | | | |
| | PR1CSOCLYLD-02B | | | PR1LDDUP-02B | | | PR1CSOCLYLD-01C | | | PR1LDDUP-01C | | | PR1CSOCLYLD-01A | | | PR1LDDUP-01A | | |
| Compound Identified | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg |
| PCB-114 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-119 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-120 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-121 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-122 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-123 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-124 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-126 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-127 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-128/162 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | 13.6 | 71 | 5.11 | 12.6 | 64 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-129 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-130 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-131 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-132/161 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-133/142 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-134/143 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-135 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | 12.7 | 66 | 5.11 | 13.3 | 68 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-136 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | 12.2 | 63 | 5.11 | 0 | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-137 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-138/163/164 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-139/149 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | 76.4 | 397 | 5.11 | 67.6 | 345 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-140 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-141 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-144 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-145 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-146/165 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-147 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-148 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-150 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-151 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | 19.6 | 102 | 5.11 | 17.8 | 91 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-152 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-153 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-154 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-155 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-156 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-157 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-158/160 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-159 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-166 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-167 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-168 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-169 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-170 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | 20.6 | 107 | 5.11 | 15.6 | 80 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-171 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |

**Table B-6**
**LSM Dissolved Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| | LSM Dissolved Sample Collection | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Event 2 Attempt 2 (12 -7 PR141) | | | | | | Event 1 Attempt 3 (4-30 PR150 ) | | | | | | Event 1 Attempt 1 (6-10-13 PR110) | | | | | |
| | PR1CSOCLYLD-02B | | | PR1LDDUP-02B | | | PR1CSOCLYLD-01C | | | PR1LDDUP-01C | | | PR1CSOCLYLD-01A | | | PR1LDDUP-01A | | |
| Compound Identified | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg |
| PCB-172 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-173 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-174 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | 21.9 | 114 | 5.11 | 18.4 | 94 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-175 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-176 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-177 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | 11.2 | 58 | 5.11 | 10.6 | 54 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-178 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-179 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-180 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-181 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-182/187 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | 29.8 | 155 | 5.11 | 28.8 | 147 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-183 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | 13.4 | 70 | 5.11 | 12.2 | 62 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-184 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-185 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-186 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-188 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-189 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-190 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-191 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-192 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-193 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-194 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-195 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-196/203 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | 13.0 | 67 | 5.11 | 13.2 | 67 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-197 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-198 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-199 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | 12.2 | 63 | 5.11 | 11.5 | 59 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-200 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-201 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-202 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-204 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-205 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-206 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-207 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-208 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |
| PCB-209 | 4.84 | | 0 | 4.97 | | 0 | 5.19 | | 0 | 5.11 | | 0 | 4.99 | | 0 | 4.86 | | 0 |

**Abbreviations**
pg/L = picograms per liter

**Table B-7**
**Whole Water Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| Compound Identified | Whole Water Sample Collection | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Event 2 Attempt 2 (12-7 PR134) | | | | | | Event 1 Attempt 3 (4-30 PR145) | | | | | | Event 1 Attempt 1 (6-10-13 PR105) | | | | | |
| | PR1CSOCLYWW-02B | | | PR1WWDUP-02B | | | PR1CSOCLYWW-01C | | | PR1WWDUP-01C | | | PR1CSOCLYWW-01A | | | PR1WWDUP-01A | | |
| | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg |
| PCB-1 | 4.67 | 14.1 | 66 | 4.99 | 19.9 | 99 | 5.03 | | 0 | 4.87 | | | 4.64 | 26.3 | 122 | 4.76 | 24.6 | 117 |
| PCB-2 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | | 4.64 | | 0 | 4.76 | | 0 |
| PCB-3 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | | 4.64 | | 0 | 4.76 | | 0 |
| PCB-4/10 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | 135 | 679 | 4.87 | 170 | 828 | 4.64 | 135 | 626 | 4.76 | 103 | 490 |
| PCB-5/8 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | 164 | 761 | 4.76 | 104 | 495 |
| PCB-6 | 4.67 | 26.6 | 124 | 4.99 | 27 | 135 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | 57.7 | 268 | 4.76 | | 0 |
| PCB-7/9 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-11 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | 422 | 1958 | 4.76 | 280 | 1333 |
| PCB-12/13 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-14 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-15 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | 78.6 | 365 | 4.76 | 30.6 | 146 |
| PCB-16/32 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | 259 | 1261 | 4.64 | 222 | 1030 | 4.76 | 160 | 762 |
| PCB-17 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | 130 | 654 | 4.87 | 226 | 1101 | 4.64 | 121 | 561 | 4.76 | 78.2 | 372 |
| PCB-18 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | 296 | 1373 | 4.76 | 180 | 857 |
| PCB-19 | 4.67 | 28.3 | 132 | 4.99 | | 0 | 5.03 | 53.8 | 271 | 4.87 | 85.9 | 418 | 4.64 | 63.9 | 296 | 4.76 | 49 | 233 |
| PCB-20/21/33 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | 192 | 891 | 4.76 | 104 | 495 |
| PCB-22 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | 127 | 589 | 4.76 | 81.2 | 387 |
| PCB-23 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-24/27 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | 41.6 | 203 | 4.64 | 31.1 | 144 | 4.76 | | 0 |
| PCB-25 | 4.67 | | 0 | 4.99 | 24.8 | 124 | 5.03 | 41.4 | 208 | 4.87 | 66.6 | 324 | 4.64 | 52 | 241 | 4.76 | 34.1 | 162 |
| PCB-26 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | 70.9 | 345 | 4.64 | 81.1 | 376 | 4.76 | 46.3 | 220 |
| PCB-28 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | 344 | 1675 | 4.64 | 370 | 1717 | 4.76 | 217 | 1033 |
| PCB-29 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-30 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-31 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | 309 | 1434 | 4.76 | 210 | 1000 |
| PCB-34 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-35 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | 11.2 | 56 | 4.87 | 17 | 83 | 4.64 | 27 | 125 | 4.76 | | 0 |
| PCB-36 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-37 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | 110 | 510 | 4.76 | 59.9 | 285 |
| PCB-38 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-39 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-40 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | 48.1 | 234 | 4.64 | 94.9 | 440 | 4.76 | 56.1 | 267 |
| PCB-41/64/71/72 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | 149 | 749 | 4.87 | 238 | 1159 | 4.64 | 449 | 2083 | 4.76 | 251 | 1195 |
| PCB-42/59 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | 62.3 | 313 | 4.87 | 95.9 | 467 | 4.64 | 157 | 728 | 4.76 | 74.8 | 356 |
| PCB-43/49 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | 163 | 820 | 4.87 | 279 | 1359 | 4.64 | 415 | 1926 | 4.76 | 224 | 1066 |
| PCB-44 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | 179 | 900 | 4.87 | 279 | 1359 | 4.64 | 568 | 2636 | 4.76 | 234 | 1114 |
| PCB-45 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | 42.7 | 208 | 4.64 | 79.3 | 368 | 4.76 | 45.5 | 217 |
| PCB-46 | 4.67 | | 0 | 4.99 | 12.3 | 61 | 5.03 | 20.1 | 101 | 4.87 | 26.6 | 130 | 4.64 | 43.3 | 201 | 4.76 | | 0 |
| PCB-47 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | 137 | 667 | 4.64 | 148 | 687 | 4.76 | 85.7 | 408 |
| PCB-48/75 | 4.67 | 22.3 | 104 | 4.99 | 24.4 | 122 | 5.03 | | 0 | 4.87 | 46.1 | 225 | 4.64 | 75.1 | 348 | 4.76 | 45.7 | 218 |
| PCB-50 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | 14.1 | 71 | 4.87 | 15.3 | 75 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-51 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | 32.1 | 156 | 4.64 | 35.3 | 164 | 4.76 | | 0 |
| PCB-52/69 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | 228 | 1147 | 4.87 | 362 | 1763 | 4.64 | 822 | 3814 | 4.76 | 459 | 2185 |
| PCB-53 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | 43.9 | 221 | 4.87 | 67.8 | 330 | 4.64 | 89.3 | 414 | 4.76 | 46.5 | 221 |
| PCB-54 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-55 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |

**Table B-7**
**Whole Water Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| | Whole Water Sample Collection | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Event 2 Attempt 2 (12-7 PR134) | | | | | | Event 1 Attempt 3 (4-30 PR145) | | | | | | Event 1 Attempt 1 (6-10-13 PR105) | | | | | |
| | PR1CSOCLYWW-02B | | | PR1WWDUP-02B | | | PR1CSOCLYWW-01C | | | PR1WWDUP-01C | | | PR1CSOCLYWW-01A | | | PR1WWDUP-01A | | |
| Compound Identified | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg |
| PCB-56/60 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | 189 | 920 | 4.64 | 340 | 1578 | 4.76 | 188 | 895 |
| PCB-57 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-58 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-61/70 | 4.67 | | 0 | 4.99 | 172 | 858 | 5.03 | 200 | 1006 | 4.87 | 345 | 1680 | 4.64 | 817 | 3791 | 4.76 | 446 | 2123 |
| PCB-62 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-63 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | 15.3 | 75 | 4.64 | 23.1 | 107 | 4.76 | | 0 |
| PCB-65 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-67 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-68 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-73 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-74 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | 61 | 307 | 4.87 | 109 | 531 | 4.64 | 242 | 1123 | 4.76 | 137 | 652 |
| PCB-76/66 | 4.67 | | 0 | 4.99 | 118 | 589 | 5.03 | 150 | 755 | 4.87 | 259 | 1261 | 4.64 | 552 | 2561 | 4.76 | 302 | 1438 |
| PCB-77 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | 35.5 | 173 | 4.64 | 72.3 | 335 | 4.76 | 44.7 | 213 |
| PCB-78 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-79 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-80 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-81 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-82 | 4.67 | 46.1 | 215 | 4.99 | 42 | 210 | 5.03 | 45.6 | 229 | 4.87 | 79.9 | 389 | 4.64 | 228 | 1058 | 4.76 | 107 | 509 |
| PCB-83 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-84/92 | 4.67 | 129 | 602 | 4.99 | 114 | 569 | 5.03 | 129 | 649 | 4.87 | 230 | 1120 | 4.64 | 674 | 3127 | 4.76 | 380 | 1809 |
| PCB-85/116 | 4.67 | 48.9 | 228 | 4.99 | 47.1 | 235 | 5.03 | 47.1 | 237 | 4.87 | 93 | 453 | 4.64 | 215 | 998 | 4.76 | 92.8 | 442 |
| PCB-86 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-87/117/125 | 4.67 | 117 | 546 | 4.99 | 113 | 564 | 5.03 | 121 | 609 | 4.87 | 215 | 1047 | 4.64 | 677 | 3141 | 4.76 | 388 | 1847 |
| PCB-88/91 | 4.67 | 40.6 | 190 | 4.99 | 37 | 185 | 5.03 | 40.3 | 203 | 4.87 | 77.8 | 379 | 4.64 | 209 | 970 | 4.76 | 108 | 514 |
| PCB-89 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-90/101 | 4.67 | 309 | 1443 | 4.99 | 283 | 1412 | 5.03 | 288 | 1449 | 4.87 | 525 | 2557 | 4.64 | 1660 | 7702 | 4.76 | 920 | 4379 |
| PCB-93 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-94 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-95/98/102 | 4.67 | 211 | 985 | 4.99 | 200 | 998 | 5.03 | 221 | 1112 | 4.87 | 390 | 1899 | 4.64 | 1180 | 5475 | 4.76 | 677 | 3223 |
| PCB-96 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-97 | 4.67 | 95.4 | 446 | 4.99 | 86.8 | 433 | 5.03 | 90.7 | 456 | 4.87 | 163 | 794 | 4.64 | 520 | 2413 | 4.76 | 299 | 1423 |
| PCB-99 | 4.67 | 114 | 532 | 4.99 | 112 | 559 | 5.03 | 116 | 583 | 4.87 | 214 | 1042 | 4.64 | 607 | 2816 | 4.76 | 341 | 1623 |
| PCB-100 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-103 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-104 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-105 | 4.67 | 122 | 570 | 4.99 | 104 | 519 | 5.03 | 113 | 568 | 4.87 | 209 | 1018 | 4.64 | 684 | 3174 | 4.76 | 355 | 1690 |
| PCB-106/118 | 4.67 | 269 | 1256 | 4.99 | 266 | 1327 | 5.03 | 266 | 1338 | 4.87 | 503 | 2450 | 4.64 | 1560 | 7238 | 4.76 | 821 | 3908 |
| PCB-107/109 | 4.67 | | 0 | 4.99 | 16.2 | 81 | 5.03 | 19.6 | 99 | 4.87 | 30.3 | 148 | 4.64 | 74.7 | 347 | 4.76 | 40.7 | 194 |
| PCB-108/112 | 4.67 | 15.8 | 74 | 4.99 | 13.4 | 67 | 5.03 | 15.1 | 76 | 4.87 | 30.2 | 147 | 4.64 | 72.6 | 337 | 4.76 | 41 | 195 |
| PCB-110 | 4.67 | 353 | 1649 | 4.99 | 307 | 1532 | 5.03 | 343 | 1725 | 4.87 | 594 | 2893 | 4.64 | 1670 | 7749 | 4.76 | 859 | 4089 |
| PCB-111/115 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | 23 | 107 | 4.76 | | 0 |
| PCB-113 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-114 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | 11.7 | 57 | 4.64 | 34.1 | 158 | 4.76 | | 0 |
| PCB-119 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | 22.4 | 104 | 4.76 | | 0 |
| PCB-120 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-121 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |

**Table B-7**
**Whole Water Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| | Whole Water Sample Collection | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Event 2 Attempt 2 (12-7 PR134) | | | | | | Event 1 Attempt 3 (4-30 PR145) | | | | | | Event 1 Attempt 1 (6-10-13 PR105) | | | | | |
| | PR1CSOCLYWW-02B | | | PR1WWDUP-02B | | | PR1CSOCLYWW-01C | | | PR1WWDUP-01C | | | PR1CSOCLYWW-01A | | | PR1WWDUP-01A | | |
| Compound Identified | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg |
| PCB-122 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | 15.5 | 72 | 4.76 | | 0 |
| PCB-123 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-124 | 4.67 | 14.5 | 68 | 4.99 | 12.7 | 63 | 5.03 | 13.2 | 66 | 4.87 | 28.1 | 137 | 4.64 | 73.7 | 342 | 4.76 | 37.1 | 177 |
| PCB-126 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-127 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-128/162 | 4.67 | 60 | 280 | 4.99 | 55.3 | 276 | 5.03 | 62.5 | 314 | 4.87 | 114 | 555 | 4.64 | 376 | 1745 | 4.76 | 184 | 876 |
| PCB-129 | 4.67 | 20 | 93 | 4.99 | 19.7 | 98 | 5.03 | 23 | 116 | 4.87 | 35.2 | 171 | 4.64 | 129 | 599 | 4.76 | 67.1 | 319 |
| PCB-130 | 4.67 | 20 | 93 | 4.99 | 19.9 | 99 | 5.03 | 22.5 | 113 | 4.87 | 47.4 | 231 | 4.64 | 117 | 543 | 4.76 | 48.8 | 232 |
| PCB-131 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-132/161 | 4.67 | 90.7 | 424 | 4.99 | 85.6 | 427 | 5.03 | 97.6 | 491 | 4.87 | 178 | 867 | 4.64 | 532 | 2468 | 4.76 | 274 | 1304 |
| PCB-133/142 | 4.67 | 11.1 | 52 | 4.99 | | 0 | 5.03 | 10.1 | 51 | 4.87 | 16 | 78 | 4.64 | 61.6 | 286 | 4.76 | 28.6 | 136 |
| PCB-134/143 | 4.67 | 18.4 | 86 | 4.99 | 17.6 | 88 | 5.03 | 18 | 91 | 4.87 | 33.4 | 163 | 4.64 | 120 | 557 | 4.76 | 64.2 | 306 |
| PCB-135 | 4.67 | 40.1 | 187 | 4.99 | 41 | 205 | 5.03 | 50.1 | 252 | 4.87 | 75.7 | 369 | 4.64 | 156 | 724 | 4.76 | 96.2 | 458 |
| PCB-136 | 4.67 | | 0 | 4.99 | 34.5 | 172 | 5.03 | 41.7 | 210 | 4.87 | 75.7 | 369 | 4.64 | 169 | 784 | 4.76 | 84.3 | 401 |
| PCB-137 | 4.67 | 17.7 | 83 | 4.99 | 13.7 | 68 | 5.03 | 18 | 91 | 4.87 | 32.1 | 156 | 4.64 | 73.7 | 342 | 4.76 | 37.1 | 177 |
| PCB-138/163/164 | 4.67 | 334 | 1560 | 4.99 | 313 | 1562 | 5.03 | 365 | 1836 | 4.87 | 674 | 3282 | 4.64 | 1990 | 9234 | 4.76 | 922 | 4389 |
| PCB-139/149 | 4.67 | 210 | 981 | 4.99 | 206 | 1028 | 5.03 | 267 | 1343 | 4.87 | 467 | 2274 | 4.64 | 1040 | 4826 | 4.76 | 601 | 2861 |
| PCB-140 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-141 | 4.67 | 59.9 | 280 | 4.99 | 62.9 | 314 | 5.03 | 71.8 | 361 | 4.87 | 151 | 735 | 4.64 | 358 | 1661 | 4.76 | 170 | 809 |
| PCB-144 | 4.67 | | 0 | 4.99 | 11.9 | 59 | 5.03 | 16.1 | 81 | 4.87 | 34.4 | 168 | 4.64 | 57.2 | 265 | 4.76 | 29.9 | 142 |
| PCB-145 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-146/165 | 4.67 | 38.3 | 179 | 4.99 | 34.6 | 173 | 5.03 | 40.9 | 206 | 4.87 | 77.3 | 376 | 4.64 | 200 | 928 | 4.76 | 102 | 486 |
| PCB-147 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | 22.8 | 106 | 4.76 | | 0 |
| PCB-148 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-150 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-151 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | 71.6 | 360 | 4.87 | 138 | 672 | 4.64 | 255 | 1183 | 4.76 | 138 | 657 |
| PCB-152 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-153 | 4.67 | 265 | 1238 | 4.99 | 243 | 1213 | 5.03 | 286 | 1439 | 4.87 | 566 | 2756 | 4.64 | 1440 | 6682 | 4.76 | 690 | 3284 |
| PCB-154 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-155 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-156 | 4.67 | 37.4 | 175 | 4.99 | 30.5 | 152 | 5.03 | 39.1 | 197 | 4.87 | 72.1 | 351 | 4.64 | 218 | 1012 | 4.76 | 106 | 505 |
| PCB-157 | 4.67 | 11.7 | 55 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | 14.9 | 73 | 4.64 | 56.6 | 263 | 4.76 | 22.3 | 106 |
| PCB-158/160 | 4.67 | 39.1 | 183 | 4.99 | 36.4 | 182 | 5.03 | 44.7 | 225 | 4.87 | 74.2 | 361 | 4.64 | 243 | 1128 | 4.76 | 118 | 562 |
| PCB-159 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-166 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-167 | 4.67 | 14.5 | 68 | 4.99 | 13.8 | 69 | 5.03 | 15.8 | 79 | 4.87 | 31.3 | 152 | 4.64 | 95.1 | 441 | 4.76 | 39.2 | 187 |
| PCB-168 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-169 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-170 | 4.67 | 72.1 | 337 | 4.99 | 72.1 | 360 | 5.03 | 99.9 | 502 | 4.87 | 231 | 1125 | 4.64 | 365 | 1694 | 4.76 | 162 | 771 |
| PCB-171 | 4.67 | 22.3 | 104 | 4.99 | 20.4 | 102 | 5.03 | 26 | 131 | 4.87 | 61.8 | 301 | 4.64 | 102 | 473 | 4.76 | 48 | 228 |
| PCB-172 | 4.67 | 15.3 | 71 | 4.99 | 12.9 | 64 | 5.03 | 17.1 | 86 | 4.87 | 46.5 | 226 | 4.64 | 61.7 | 286 | 4.76 | 25.5 | 121 |
| PCB-173 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-174 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | 104 | 523 | 4.87 | 245 | 1193 | 4.64 | 413 | 1916 | 4.76 | 181 | 862 |
| PCB-175 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-176 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | 13.1 | 66 | 4.87 | 26.2 | 128 | 4.64 | 44.8 | 208 | 4.76 | | 0 |
| PCB-177 | 4.67 | 43.3 | 202 | 4.99 | 41.1 | 205 | 5.03 | 60.8 | 306 | 4.87 | 136 | 662 | 4.64 | 250 | 1160 | 4.76 | 108 | 514 |

**Table B-7**
**Whole Water Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| | Whole Water Sample Collection | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Event 2 Attempt 2 (12 -7 PR134) | | | | | | Event 1 Attempt 3 (4-30 PR145) | | | | | | Event 1 Attempt 1 (6-10-13 PR105) | | | | | |
| | PR1CSOCLYWW-02B | | | PR1WWDUP-02B | | | PR1CSOCLYWW-01C | | | PR1WWDUP-01C | | | PR1CSOCLYWW-01A | | | PR1WWDUP-01A | | |
| Compound Identified | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg | Volume Liters | Sample Result pg/L | Mass pg |
| PCB-178 | 4.67 | 17.8 | 83 | 4.99 | 17.9 | 89 | 5.03 | | 0 | 4.87 | 53.6 | 261 | 4.64 | 70.8 | 329 | 4.76 | 25.4 | 121 |
| PCB-179 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | 47 | 236 | 4.87 | 97 | 472 | 4.64 | 165 | 766 | 4.76 | 73.8 | 351 |
| PCB-180 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | 222 | 1117 | 4.87 | 540 | 2630 | 4.64 | 889 | 4125 | 4.76 | 396 | 1885 |
| PCB-181 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-182/187 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | 133 | 669 | 4.87 | 302 | 1471 | 4.64 | 388 | 1800 | 4.76 | 163 | 776 |
| PCB-183 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | 60.7 | 305 | 4.87 | 131 | 638 | 4.64 | 177 | 821 | 4.76 | 79.1 | 377 |
| PCB-184 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-185 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | 13 | 65 | 4.87 | 32.3 | 157 | 4.64 | 43.8 | 203 | 4.76 | | 0 |
| PCB-186 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-188 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-189 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-190 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | 19.1 | 96 | 4.87 | 47.6 | 232 | 4.64 | 99 | 459 | 4.76 | 37.7 | 179 |
| PCB-191 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-192 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-193 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | 25.4 | 124 | 4.64 | 66 | 306 | 4.76 | 21 | 100 |
| PCB-194 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | 49.2 | 247 | 4.87 | 137 | 667 | 4.64 | 191 | 886 | 4.76 | 80.4 | 383 |
| PCB-195 | 4.67 | 15.8 | 74 | 4.99 | 13.8 | 69 | 5.03 | 21.8 | 110 | 4.87 | 51.9 | 253 | 4.64 | 86.2 | 400 | 4.76 | 29.4 | 140 |
| PCB-196/203 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | 54.5 | 274 | 4.87 | 153 | 745 | 4.64 | 152 | 705 | 4.76 | 69.5 | 331 |
| PCB-197 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-198 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-199 | 4.67 | 42 | 196 | 4.99 | 36.6 | 183 | 5.03 | 53 | 267 | 4.87 | 157 | 765 | 4.64 | 165 | 766 | 4.76 | 87 | 414 |
| PCB-200 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | 20.1 | 98 | 4.64 | 24.6 | 114 | 4.76 | | 0 |
| PCB-201 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | 22 | 107 | 4.64 | 29.3 | 136 | 4.76 | | 0 |
| PCB-202 | 4.67 | | 0 | 4.99 | 11.1 | 55 | 5.03 | 15 | 75 | 4.87 | 36.3 | 177 | 4.64 | 44.8 | 208 | 4.76 | | 0 |
| PCB-204 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-205 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-206 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | 35.6 | 179 | 4.87 | 105 | 511 | 4.64 | 132 | 612 | 4.76 | 61 | 290 |
| PCB-207 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | 11.2 | 55 | 4.64 | | 0 | 4.76 | | 0 |
| PCB-208 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | 11.5 | 58 | 4.87 | 30 | 146 | 4.64 | 49 | 227 | 4.76 | | 0 |
| PCB-209 | 4.67 | | 0 | 4.99 | | 0 | 5.03 | | 0 | 4.87 | | 0 | 4.64 | 94.7 | 439 | 4.76 | | 0 |

**Abbreviations**
pg/L = picograms per liter

# Appendix C

Data Evaluation Summaries and Analytical Results – Aroclor PCBs

**Table C-1**
**Summary of Detected PCB Aroclors by Method and Event**
**Phase I Report Addendum – Additional Data Evaluation**

| Analyte | Event/ Attempt | Number of Detections (Parent and Duplicate Sample) Total Concentrations (µg/L) HSM | LSM | WW | Particulates (µg/L) HSM | LSM | Dissolved (µg/L) HSM | LSM | Percent Increase for HSM Compared to Other Methods for Total Concentrations When Detected by Both Methods LSM | WW | Percent Increase for LSM Compared to WW for Total Concentrations When Detected by Both Methods | Percent Increase for HSM Compared to LSM for Particulate Concentrations When Detected by Both Methods | Percent Increase for HSM Compared to LSM for Dissolved Concentrations When Detected by Both Methods |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Aroclor 1254 | All | 2 | 0 | 0 | 2 | 0 | 0 | 0 | | | | | |
| **Summary** | | | | | | | | | | | | | |
| **9 Aroclors** | **1 / 2** | **1.0** | **0.0** | **0.0** | **1.0** | **0.0** | **0.0** | **0.0** | | | | | |
| **9 Aroclors** | **2 / 2** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | | | | | |
| **9 Aroclors** | **All** | **0.5** | **0.0** | **0.0** | **0.5** | **0.0** | **0.0** | **0.00** | | | | | |
| **Percent of Detected Analytes** | **All** | **6%** | **0%** | **0%** | **6%** | **0%** | **0%** | **0%** | | | | | |

**Conclusions**

Samples were analyzed for 9 Aroclor PCBs, however, only compounds that were positively identified during analysis are presented.
Positive results were reported for HSM particulate analysis only.
Samples were analyzed for a total of 9 Aroclors, however, only Aroclors that were positively identified during analysis are presented.
Percent increase calcuations not performed since Aroclor PCBs were positively identified only for HSM particulate analysis.

**Abbreviations**

µg/L = micrograms per liter
% = percent
HSM = high solids mass
LSM = low solids mass
WW = whole water

**Table C-2**
**Statistical Comparison of the Number of Detected PCB Aroclors by Method and Event**
**Phase I Report Addendum – Additional Data Evaluation**

| Event | Number of Detections (Total Water Concentration) | | | Maximum Possible Number of Detections[1] | Fisher Exact Test (p-value)[2] | | |
|---|---|---|---|---|---|---|---|
| | HSM | LSM | WW | | HSM vs. LSM | HSM vs. WW | LSM vs. WW |
| **1/2** | 2 | 0 | 0 | 9 | 0.471 | 0.471 | 1.000 |
| **2/2** | 0 | 0 | 0 | 9 | 1.000 | 1.000 | 1.000 |
| **All** | 2 | 0 | 0 | 18 | 0.459 | 0.459 | 1.000 |

**Notes**

[1] Total number of detections for event includes 2 duplicates and 9 compounds.

[2] The p-value shown is based on a two-sided Fisher Exact Test. A p-value less than 0.05 is considered evidence of a significant difference among methods compared.

**Conclusion**

All methods are similar with respect to the number of detected compounds.

**Abbreviations**

HSM = high solids mass
LSM = low solids mass
WW = whole water

**Table C-3**
**HSM Particulate Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| | HSM Particulate Sample Collection | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Event 1 Attempt 2 (7-1-13 PR116) | | | | Event 2 Attempt 2 (12-07-13 PR135) | | | |
| | PR1CSOCLYHP-01B | | PR1HPDUP-01B | | PR1CSOCLYHP-02B | | PR1HPDUP-02B | |
| Wet weight (gram) | 30.5 | | 30.5 | | 30.0 | | 30.0 | |
| % Solids | 35 | | 33 | | 42 | | 41 | |
| Compound Identified | Sample Result ug/Kg | Converted Sample Result ug/L | Sample Result ug/Kg | Converted Sample Result ug/L | Sample Result ug/Kg | Converted Sample Result ug/L | Sample Result ug/Kg | Converted Sample Result ug/L |
| Aroclor 1254 | 130 | 0.00405 | 160 | 0.00469 | 0 | 0 | 0 | 0 |
| Aroclor 1260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Note:
A "0" value in the sample result column represents a result that was qualified by the lab as "G". A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate.
A "null" value in the sample result column represents a non-detect (ND) result.

**Abbreviations**
µg/L = micrograms per liter
µg/Kg = micrograms per kilogram

**Table C-4**
**HSM Dissolved Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| Compound Identified | HSM Dissolved Sample Collection | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Event 1 Attempt 2 (07-01-13 PR117) | | | | Event 2 Attempt 2 (12-07-13 PR138) | | | |
| | PR1CSOCLYHD-01B | | PR1HDDUP-01B | | PR1CSOCLYHD-02B | | PR1HDDUP-02B | |
| | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L |
| N/A | 1.01 | | 0.99 | | 0.95 | | 1.00 | |

Note:
A "0" value in the sample result column represents a result that was qualified by the lab as "G". A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate.
A "null" value in the sample result column represents a non-detect (ND) result.
**Abbreviations**
µg/L = micrograms per liter

**Table C-5**
**LSM Particulate Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| | LSM Particulate Sample Collection | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Event 1 Attempt 2 (07-05-13 PR119) | | | | Event 2 Attempt 2 (12-11-13 PR140) | | | |
| | PR1CSOCLYLP-01B | | PR1LPDUP-01B | | PR1CSOCLYLP-02B | | PR1LPDUP-02B | |
| TSS (mg/L) | 64.8 | | 67.1 | | 8.4 | | 13.5 | |
| Total Liters Filtered (L) | 0.979 | | 1.045 | | 1.013 | | 1.038 | |
| **Compound Identified** | **Weight gram** | **Sample Result ug/Kg** | **Weight gram** | **Sample Result ug/Kg** | **Weight gram** | **Sample Result ug/Kg** | **Weight gram** | **Sample Result ug/Kg** |
| N/A | 0.0636 | | 0.07 | | 0.0085 | | 0.014 | |

Note:
A "0" value in the sample result column represents a result that was qualified by the lab as "G". A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate.
A "null" value in the sample result column represents a ND result.

**Abbreviations**

µg/Kg = micrograms per kilogram

**Table C-6**
**LSM Dissolved Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| Compound Identified | LSM Dissolved Sample Collection | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Event 1 Attempt 2 (07-05-13 PR120) | | | | Event 2 Attempt 2 (12-11-13 PR141) | | | |
| | PR1CSOCLYLD-01B | | PR1LDDUP-01B | | PR1CSOCLYLD-02B | | PR1LDDUP-02B | |
| | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L |
| N/A | 1.01 | | 1.02 | | 1.01 | | 1.04 | |

Note:
A "0" value in the sample result column represents a result that was qualified by the lab as "G". A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate.
A "null" value in the sample result column represents a non-detect (ND) result.

**Abbreviations**

µg/L = micrograms per liter

**Table C-7**
**Whole Water Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| Compound Identified | Whole Water Sample Collection | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Event 1 Attepmt 2 (07-01-13 PR115) | | | | Event 2 Attempt 2 (12-07-13 PR134) | | | |
| | PR1CSOCLYWW-01B | | PR1WWDUP-01B | | PR1CSOCLYWW-02B | | PR1WWDUP-02B | |
| | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L |
| N/A | 0.985 | | 0.985 | | 1.05 | | 1.04 | |

Note:
A "0" value in the sample result column represents a result that was qualified by the lab as "G". A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate.
A "null" value in the sample result column represents a non-detect (ND) result.

**Abbreviations**
µg/L = micrograms per liter

**Appendix D**

Data Evaluation Summaries and Analytical Results – Organochlorine Pesticides

**Table D-1**
**Summary of Detected Organochlorine Pesticides Congeners by Method and Event**
**Phase I Report Addendum – Additional Data Evaluation**

| Analyte (Pesticides) | Event/ Attempt | Number of Detections (Parent and Duplicate Sample) | | | | | | | Percent Difference for HSM Compared to Other Methods for Total Concentrations (pg/L) When Detected by Both Methods | | Percent Difference for LSM Compared to WW for Total Concentrations (pg/L) When Detected by Both Methods | Percent Difference for HSM Compared to LSM for Particulate Concentrations (pg/L) When Detected by Both Methods | Percent Difference for HSM Compared to LSM for Dissolved Concentrations (pg/L) When Detected by Both Methods |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Total Concentrations (pg/L) | | | Particulates (pg/L) | | Dissolved (pg/L) | | | | | | |
| | | HSM | LSM | WW | HSM | LSM | HSM | LSM | LSM | WW | | | |
| HEXACHLOROBENZENE | All | 1 | 0 | 0 | 1 | 0 | 0 | 0 | | | | | |
| ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE) | All | 2 | 3 | 3 | 1 | 0 | 2 | 3 | -3% | -11% | -6% | | -5% |
| GAMMA BHC (LINDANE) | All | 4 | 4 | 4 | 3 | 2 | 4 | 4 | 5% | 2% | -2% | -67% | 7% |
| BETA BHC (BETA HEXACHLOROCYCLOHEXANE) | All | 3 | 2 | 4 | 2 | 1 | 2 | 2 | 0% | -42% | 2% | -76% | 11% |
| DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE) | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| HEPTACHLOR | All | 3 | 2 | 2 | 1 | 1 | 2 | 1 | 65% | -12% | -46% | | 265% |
| ALDRIN | All | 2 | 2 | 2 | 0 | 1 | 2 | 2 | -5% | -29% | -25% | | 56% |
| OXYCHLORDANE | All | 3 | 3 | 4 | 2 | 3 | 1 | 0 | -11% | -61% | -48% | -65% | |
| HEPTACHLOR EPOXIDE | All | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 16% | 11% | -3% | -48% | 73% |
| BETA-CHLORDANE | All | 4 | 4 | 4 | 4 | 4 | 4 | 4 | -6% | 13% | 21% | -66% | 119% |
| TRANS-NONACHLOR | All | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4% | 11% | 6% | -51% | 113% |
| ALPHA-CHLORDANE | All | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 5% | 24% | 17% | -55% | 128% |
| ALPHA ENDOSULFAN | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| O,P'-DDE | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| P,P'-DDE | All | 3 | 0 | 0 | 3 | 0 | 0 | 0 | | | | | |
| DIELDRIN | All | 4 | 4 | 4 | 4 | 3 | 4 | 4 | 41% | 23% | -12% | -46% | 105% |
| ENDRIN | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| CIS-NONACHLOR | All | 4 | 4 | 4 | 4 | 4 | 3 | 3 | 4% | 3% | -4% | -42% | 128% |
| BETA ENDOSULFAN | All | 0 | 0 | 2 | 0 | 0 | 0 | 0 | | | | | |
| O,P'-DDD | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| O,P'-DDT | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| P,P'-DDD | All | 2 | 0 | 0 | 2 | 0 | 0 | 0 | | | | | |
| P,P'-DDT | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| ENDOSULFAN SULFATE | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| METHOXYCHLOR | All | 2 | 2 | 3 | 0 | 1 | 2 | 2 | 4% | -25% | -28% | | 52% |
| MIREX | All | 1 | 0 | 0 | 0 | 0 | 1 | 0 | | | | | |
| ENDRIN ALDEHYDE | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| ENDRIN KETONE | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| **Summary** | | | | | | | | | | | | | |
| **28 Analytes** | **1/2** | **15** | **12** | **13** | **10** | **9.0** | **12** | **11** | **8%** | **-13%** | **-14%** | **-70%** | **79%** |
| **28 Analytes** | **2/2** | **11** | **9.0** | **12** | **9.5** | **7.0** | **8.0** | **8.0** | **8%** | **5%** | **3%** | **-37%** | **107%** |
| **28 Analytes** | **All** | **13** | **11** | **12** | **9.8** | **8.0** | **9.8** | **9.3** | **8%** | **-5%** | **-7%** | **-55%** | **91%** |
| **Percent of 28 Detected Analytes** | **All** | **45%** | **38%** | **43%** | **35%** | **29%** | **35%** | **33%** | | | | | |

**Conclusions**

HSM has a higher frequency of detection for both total (45%), particulate (35%), and dissolved (35%) concentrations.
Where detected in both methods, HSM total concentrations are on average 8% greater than total LSM concentrations; however, there is large variability among events.
Where detected in both methods, HSM total concentrations are slightly lower on average (-5%) than WW concentrations; however, there is great variability among events.
Where detected in both methods, LSM total concentrations are slightly lower on average than WW concentrations (-7%).
Where detected in both methods, HSM particulate concentrations are on average lower than LSM particulate concentrations (-55%).
Where detected in both methods, HSM dissolved concentrations are on average 91% greater than LSM dissolved concentrations.

**Abbreviations**

pg/L = picograms per liter
% = percent
HSM = high solids mass
LSM = low solids mass
WW = whole water

**Table D-2**
**Statistical Comparison of the Number of Detected Organochlorine Pesticides by Method and Event**
**Phase I Report Addendum – Additional Data Evaluation**

| Event | Water Concentration) | | | Maximum Possible Number of Detections[1] | Chi-Square Test (p-value)[2] | | |
|---|---|---|---|---|---|---|---|
| | HSM | LSM | WW | | HSM vs. LSM | HSM vs. WW | LSM vs. WW |
| **1/2** | 29 | 24 | 25 | 56 | 0.344 | 0.449 | 0.849 |
| **2/2** | 21 | 18 | 23 | 56 | 0.552 | 0.699 | 0.327 |
| **All** | 50 | 42 | 48 | 112 | 0.277 | 0.788 | 0.414 |

**Notes**

[1] Total number of detections for event includes 2 duplicates and 28 analytes.

[2] A p-value less than 0.05 is considered significant and is shaded indicating that the number of detects is significantly different between methods.

**Conclusion**

There is no statistically significant difference among methods with respect to the number of detected analytes.

**Abbreviations**

HSM = high solids mass
LSM = low solids mass
WW = whole water

**Table D-3**
**HSM Particulate Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| | HSM Particulate Sample Collection | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Event 1 Attempt 2 (7-1 PR116) | | | | | | Event 2 Attempt 2( 12-7 PR135) | | | | | |
| | PR1CSOCLYHP-01B | | | PR1HPDUP-01B | | | PR1CSOCLYHP-02B | | | PR1HPDUP-02B | | |
| Wet weight (gram) | 5.67 | | | 5.56 | | | 5.67 | | | 6.1 | | |
| % Solids | 51.9 | | | 35.8 | | | 36.2 | | | 32.9 | | |
| **Compound Identified** | **Weight gram (dry)** | **Sample Result pg/g** | **Converted Sample Result pg/L** | **Weight gram** | **Sample Result pg/g** | **Converted Sample Result pg/L** | **Weight gram** | **Sample Result pg/g** | **Converted Sample Result pg/L** | **Weight gram** | **Sample Result pg/g** | **Converted Sample Result pg/L** |
| HEXACHLOROBENZENE | 2.94 | | 0 | 1.99 | | 0 | 2.05 | 2670 | 86 | 2.01 | | 0 |
| ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE) | 2.94 | | 0 | 1.99 | | 0 | 2.05 | 102 | 3 | 2.01 | | 0 |
| GAMMA BHC (LINDANE) | 2.94 | 294 | 14 | 1.99 | 319 | 10 | 2.05 | 342 | 11 | 2.01 | | 0 |
| BETA BHC (BETA HEXACHLOROCYCLOHEXANE) | 2.94 | | 0 | 1.99 | 268 | 9 | 2.05 | 223 | 7 | 2.01 | | 0 |
| DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE) | 2.94 | | 0 | 1.99 | | 0 | 2.05 | | 0 | 2.01 | | 0 |
| HEPTACHLOR | 2.94 | | 0 | 1.99 | | 0 | 2.05 | 680 | 22 | 2.01 | | 0 |
| ALDRIN | 2.94 | | 0 | 1.99 | | 0 | 2.05 | | 0 | 2.01 | | 0 |
| OXYCHLORDANE | 2.94 | | 0 | 1.99 | 476 | 15 | 2.05 | 554 | 18 | 2.01 | | 0 |
| HEPTACHLOR EPOXIDE | 2.94 | 555 | 26 | 1.99 | 1,690 | 54 | 2.05 | 1,590 | 51 | 2.01 | 1,530 | 45 |
| BETA-CHLORDANE | 2.94 | 3,930 | 181 | 1.99 | 10,900 | 347 | 2.05 | 10,000 | 321 | 2.01 | 9,350 | 273 |
| TRANS-NONACHLOR | 2.94 | 2,780 | 128 | 1.99 | 7,350 | 234 | 2.05 | 8,080 | 259 | 2.01 | 7,790 | 228 |
| ALPHA-CHLORDANE | 2.94 | 5,320 | 245 | 1.99 | 15,200 | 484 | 2.05 | 13,500 | 433 | 2.01 | 13,600 | 398 |
| ALPHA ENDOSULFAN | 2.94 | | 0 | 1.99 | | 0 | 2.05 | | 0 | 2.01 | | 0 |
| O,P'-DDE | 2.94 | | 0 | 1.99 | | 0 | 2.05 | | 0 | 2.01 | | 0 |
| P,P'-DDE | 2.94 | 7,840 | 361 | 1.99 | 23,000 | 732 | 2.05 | 21,100 | 677 | 2.01 | | 0 |
| DIELDRIN | 2.94 | 3,680 | 170 | 1.99 | 9,470 | 301 | 2.05 | 5,050 | 162 | 2.01 | 5,550 | 162 |
| ENDRIN | 2.94 | | 0 | 1.99 | | 0 | 2.05 | | 0 | 2.01 | | 0 |
| CIS-NONACHLOR | 2.94 | 538 | 25 | 1.99 | 2,750 | 88 | 2.05 | 2,320 | 74 | 2.01 | 2,740 | 80 |
| BETA ENDOSULFAN | 2.94 | | 0 | 1.99 | | 0 | 2.05 | | 0 | 2.01 | | 0 |
| O,P'-DDD | 2.94 | | 0 | 1.99 | | 0 | 2.05 | | 0 | 2.01 | | 0 |
| O,P'-DDT | 2.94 | | 0 | 1.99 | | 0 | 2.05 | | 0 | 2.01 | | 0 |
| P,P'-DDD | 2.94 | 29,200 | 1,346 | 1.99 | 102,000 | 3,246 | 2.05 | | 0 | 2.01 | | 0 |
| P,P'-DDT | 2.94 | | 0 | 1.99 | | 0 | 2.05 | | 0 | 2.01 | | 0 |
| ENDOSULFAN SULFATE | 2.94 | | 0 | 1.99 | | 0 | 2.05 | | 0 | 2.01 | | 0 |
| METHOXYCHLOR | 2.94 | | 0 | 1.99 | | 0 | 2.05 | | 0 | 2.01 | | 0 |
| MIREX | 2.94 | | 0 | 1.99 | | 0 | 2.05 | | 0 | 2.01 | | 0 |
| ENDRIN ALDEHYDE | 2.94 | | 0 | 1.99 | | 0 | 2.05 | | 0 | 2.01 | | 0 |
| ENDRIN KETONE | 2.94 | | 0 | 1.99 | | 0 | 2.05 | | 0 | 2.01 | | 0 |

**Abbreviations**
pg/L = picograms per liter
pg/g = picograms per gram

**Table D-4**
**HSM Dissolved Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| | HSM Dissolved Sample Collection | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Event 1 Attempt 2 (7-1 PR117) | | | | Event 2 Attempt 2 ( 12-7 PR138) | | | |
| | PR1CSOCLYHD-01B | | PR1HDDUP-01B | | PR1CSOCLYHD-02B | | PR1HDDUP-02B | |
| Compound Identified | Volume Liters | Sample Result pg/L | Volume Liters | Sample Result pg/L | Volume Liters | Sample Result pg/L | Volume Liters | Sample Result pg/L |
| HEXACHLOROBENZENE | 2.49 | | 2.41 | | 2.49 | | 2.42 | |
| ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE) | 2.49 | | 2.41 | | 2.49 | 60.3 | 2.42 | 63.2 |
| GAMMA BHC (LINDANE) | 2.49 | 291 | 2.41 | 290 | 2.49 | 153 | 2.42 | 150 |
| BETA BHC (BETA HEXACHLOROCYCLOHEXANE) | 2.49 | 131 | 2.41 | 128 | 2.49 | | 2.42 | |
| DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE) | 2.49 | | 2.41 | | 2.49 | | 2.42 | |
| HEPTACHLOR | 2.49 | 130 | 2.41 | 129 | 2.49 | | 2.42 | |
| ALDRIN | 2.49 | 65 | 2.41 | 56 | 2.49 | | 2.42 | |
| OXYCHLORDANE | 2.49 | 45 | 2.41 | 0 | 2.49 | | 2.42 | |
| HEPTACHLOR EPOXIDE | 2.49 | 320 | 2.41 | 335 | 2.49 | 112 | 2.42 | 119 |
| BETA-CHLORDANE | 2.49 | 1,870 | 2.41 | 1,590 | 2.49 | 513 | 2.42 | 540 |
| TRANS-NONACHLOR | 2.49 | 774 | 2.41 | 935 | 2.49 | 311 | 2.42 | 320 |
| ALPHA-CHLORDANE | 2.49 | 1,870 | 2.41 | 1,830 | 2.49 | 591 | 2.42 | 622 |
| ALPHA ENDOSULFAN | 2.49 | | 2.41 | | 2.49 | | 2.42 | |
| O,P'-DDE | 2.49 | | 2.41 | | 2.49 | | 2.42 | |
| P,P'-DDE | 2.49 | | 2.41 | | 2.49 | | 2.42 | |
| DIELDRIN | 2.49 | 2,390 | 2.41 | 2,290 | 2.49 | 480 | 2.42 | 456 |
| ENDRIN | 2.49 | | 2.41 | | 2.49 | | 2.42 | |
| CIS-NONACHLOR | 2.49 | 252 | 2.41 | 0 | 2.49 | 80.6 | 2.42 | 81.8 |
| BETA ENDOSULFAN | 2.49 | | 2.41 | | 2.49 | | 2.42 | |
| O,P'-DDD | 2.49 | | 2.41 | | 2.49 | | 2.42 | |
| O,P'-DDT | 2.49 | | 2.41 | | 2.49 | | 2.42 | |
| P,P'-DDD | 2.49 | | 2.41 | | 2.49 | | 2.42 | |
| P,P'-DDT | 2.49 | | 2.41 | | 2.49 | | 2.42 | |
| ENDOSULFAN SULFATE | 2.49 | | 2.41 | | 2.49 | | 2.42 | |
| METHOXYCHLOR | 2.49 | 380 | 2.41 | 375 | 2.49 | | 2.42 | |
| MIREX | 2.49 | 16.5 | 2.41 | 0 | 2.49 | | 2.42 | |
| ENDRIN ALDEHYDE | 2.49 | | 2.41 | | 2.49 | | 2.42 | |
| ENDRIN KETONE | 2.49 | | 2.41 | | 2.49 | | 2.42 | |

**Abbreviations**
pg/L = picograms per liter

**Table D-5**
**LSM Particulate Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| | **LSM Particulate Sample Collection** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Event 1 Attempt 2 (7-1 PR119)** | | | | | | **Event 2 Attempt 2 ( 12-7 PR140)** | | | | | |
| | **PR1CSOCLYLP-01B** | | | **PR1LPDUP-01B** | | | **PR1CSOCLYLP-02B** | | | **PR1LPDUP-02B** | | |
| Total Liters Filtered (L) | **2.558** | | | **2.550** | | | **2.43** | | | **2.357** | | |
| **Compound Identified** | **Weight gram** | **Sample Result pg/g** | **Converted Sample Result pg/L** | **Weight gram** | **Sample Result pg/g** | **Converted Sample Result pg/L** | **Weight gram** | **Sample Result pg/g** | **Converted Sample Result pg/L** | **Weight gram** | **Sample Result pg/g** | **Converted Sample Result pg/L** |
| HEXACHLOROBENZENE | 0.166 | | 0 | 0.171 | | 0 | 0.0204 | | 0 | 0.0318 | | 0 |
| ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE) | 0.166 | | 0 | 0.171 | | 0 | 0.0204 | | 0 | 0.0318 | | 0 |
| GAMMA BHC (LINDANE) | 0.166 | 455 | 30 | 0.171 | 617 | 41 | 0.0204 | | 0 | 0.0318 | | 0 |
| BETA BHC (BETA HEXACHLOROCYCLOHEXANE) | 0.166 | | 0 | 0.171 | 520 | 35 | 0.0204 | | 0 | 0.0318 | | 0 |
| DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE) | 0.166 | | 0 | 0.171 | | 0 | 0.0204 | | 0 | 0.0318 | | 0 |
| HEPTACHLOR | 0.166 | | 0 | 0.171 | 1,290 | 87 | 0.0204 | | 0 | 0.0318 | | 0 |
| ALDRIN | 0.166 | 772 | 50 | 0.171 | | 0 | 0.0204 | | 0 | 0.0318 | | 0 |
| OXYCHLORDANE | 0.166 | 646 | 42 | 0.171 | | 0 | 0.0204 | 2,710 | 23 | 0.0318 | 2,110 | 28 |
| HEPTACHLOR EPOXIDE | 0.166 | 2,600 | 169 | 0.171 | 2,770 | 186 | 0.0204 | 6,060 | 51 | 0.0318 | 4,870 | 66 |
| BETA-CHLORDANE | 0.166 | 20,200 | 1,311 | 0.171 | 22,100 | 1,482 | 0.0204 | 62,600 | 526 | 0.0318 | 49,800 | 672 |
| TRANS-NONACHLOR | 0.166 | 8,890 | 577 | 0.171 | 10,800 | 724 | 0.0204 | 39,500 | 332 | 0.0318 | 27,400 | 370 |
| ALPHA-CHLORDANE | 0.166 | 17,800 | 1,155 | 0.171 | 21,800 | 1,462 | 0.0204 | 67,500 | 567 | 0.0318 | 55,600 | 750 |
| ALPHA ENDOSULFAN | 0.166 | | 0 | 0.171 | | 0 | 0.0204 | | 0 | 0.0318 | | 0 |
| O,P'-DDE | 0.166 | | 0 | 0.171 | | 0 | 0.0204 | | 0 | 0.0318 | | 0 |
| P,P'-DDE | 0.166 | | 0 | 0.171 | | 0 | 0.0204 | | 0 | 0.0318 | | 0 |
| DIELDRIN | 0.166 | | 0 | 0.171 | 18,000 | 1,207 | 0.0204 | 27,300 | 229 | 0.0318 | 18,200 | 246 |
| ENDRIN | 0.166 | | 0 | 0.171 | | 0 | 0.0204 | | 0 | 0.0318 | | 0 |
| CIS-NONACHLOR | 0.166 | 1,820 | 118 | 0.171 | 2,480 | 166 | 0.0204 | 11,800 | 99 | 0.0318 | 7,820 | 106 |
| BETA ENDOSULFAN | 0.166 | | 0 | 0.171 | | 0 | 0.0204 | | 0 | 0.0318 | | 0 |
| O,P'-DDD | 0.166 | | 0 | 0.171 | | 0 | 0.0204 | | 0 | 0.0318 | | 0 |
| O,P'-DDT | 0.166 | | 0 | 0.171 | | 0 | 0.0204 | | 0 | 0.0318 | | 0 |
| P,P'-DDD | 0.166 | | 0 | 0.171 | | 0 | 0.0204 | | 0 | 0.0318 | | 0 |
| P,P'-DDT | 0.166 | | 0 | 0.171 | | 0 | 0.0204 | | 0 | 0.0318 | | 0 |
| ENDOSULFAN SULFATE | 0.166 | | 0 | 0.171 | | 0 | 0.0204 | | 0 | 0.0318 | | 0 |
| METHOXYCHLOR | 0.166 | | 0 | 0.171 | 3,410 | 229 | 0.0204 | | 0 | 0.0318 | | 0 |
| MIREX | 0.166 | | 0 | 0.171 | | 0 | 0.0204 | | 0 | 0.0318 | | 0 |
| ENDRIN ALDEHYDE | 0.166 | | 0 | 0.171 | | 0 | 0.0204 | | 0 | 0.0318 | | 0 |
| ENDRIN KETONE | 0.166 | | 0 | 0.171 | | 0 | 0.0204 | | 0 | 0.0318 | | 0 |

**Abbreviations**
pg/L = picograms per liter
pg/g = picograms per gram

**Table D-6**
**LSM Dissolved Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| Compound Identified | LSM Dissolved Sample Collection | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Event 1 Attempt 2 (7-1 PR120) | | | | Event 2 Attempt 2 (12-7 PR141) | | | |
| | PR1CSOCLYLD-01B | | PR1LDDUP-01B | | PR1CSOCLYLD-02B | | PR1LDDUP-02B | |
| | Volume Liters | Sample Result pg/L | Volume Liters | Sample Result pg/L | Volume Liters | Sample Result pg/L | Volume Liters | Sample Result pg/L |
| HEXACHLOROBENZENE | 2.49 | | 2.5 | | 2.44 | | 2.41 | |
| ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE) | 2.49 | 25.8 | 2.5 | 0 | 2.44 | 66.9 | 2.41 | 63.5 |
| GAMMA BHC (LINDANE) | 2.49 | 262 | 2.5 | 286 | 2.44 | 147 | 2.41 | 134 |
| BETA BHC (BETA HEXACHLOROCYCLOHEXANE) | 2.49 | 110 | 2.5 | 124 | 2.44 | | 2.41 | |
| DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE) | 2.49 | | 2.5 | | 2.44 | | 2.41 | |
| HEPTACHLOR | 2.49 | 70.9 | 2.5 | 0 | 2.44 | | 2.41 | |
| ALDRIN | 2.49 | 36.8 | 2.5 | 40.5 | 2.44 | | 2.41 | |
| OXYCHLORDANE | 2.49 | | 2.5 | | 2.44 | | 2.41 | |
| HEPTACHLOR EPOXIDE | 2.49 | 210 | 2.5 | 211 | 2.44 | 65 | 2.41 | 56.2 |
| BETA-CHLORDANE | 2.49 | 865 | 2.5 | 1,020 | 2.44 | 210 | 2.41 | 204 |
| TRANS-NONACHLOR | 2.49 | 422 | 2.5 | 605 | 2.44 | 123 | 2.41 | 120 |
| ALPHA-CHLORDANE | 2.49 | 1,120 | 2.5 | 1,120 | 2.44 | 218 | 2.41 | 200 |
| ALPHA ENDOSULFAN | 2.49 | | 2.5 | | 2.44 | | 2.41 | |
| O,P'-DDE | 2.49 | | 2.5 | | 2.44 | | 2.41 | |
| P,P'-DDE | 2.49 | | 2.5 | | 2.44 | | 2.41 | |
| DIELDRIN | 2.49 | 1,160 | 2.5 | 1,240 | 2.44 | 220 | 2.41 | 214 |
| ENDRIN | 2.49 | | 2.5 | | 2.44 | | 2.41 | |
| CIS-NONACHLOR | 2.49 | 117 | 2.5 | 0 | 2.44 | 33.6 | 2.41 | 33.7 |
| BETA ENDOSULFAN | 2.49 | | 2.5 | | 2.44 | | 2.41 | |
| O,P'-DDD | 2.49 | | 2.5 | | 2.44 | | 2.41 | |
| O,P'-DDT | 2.49 | | 2.5 | | 2.44 | | 2.41 | |
| P,P'-DDD | 2.49 | | 2.5 | | 2.44 | | 2.41 | |
| P,P'-DDT | 2.49 | | 2.5 | | 2.44 | | 2.41 | |
| ENDOSULFAN SULFATE | 2.49 | | 2.5 | | 2.44 | | 2.41 | |
| METHOXYCHLOR | 2.49 | 239 | 2.5 | 257 | 2.44 | | 2.41 | |
| MIREX | 2.49 | | 2.5 | | 2.44 | | 2.41 | |
| ENDRIN ALDEHYDE | 2.49 | | 2.5 | | 2.44 | | 2.41 | |
| ENDRIN KETONE | 2.49 | | 2.5 | | 2.44 | | 2.41 | |

**Abbreviations**
pg/L = picograms per liter

**Table D-7**
**Whole Water Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| Compound Identified | Whole Water Sample Collection | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Event 1 Attempt 2 (7-1 PR115) | | | | Event 2 Attempt 2 ( 12-7 PR134) | | | |
| | PR1CSOCLYWW-01B | | PR1WWDUP-01B | | PR1CSOCLYWW-02B | | PR1WWDUP-02B | |
| | Volume Liters | Sample Result pg/L | Volume Liters | Sample Result pg/L | Volume Liters | Sample Result pg/L | Volume Liters | Sample Result pg/L |
| HEXACHLOROBENZENE | 2.45 | | 2.53 | | 2.49 | | 2.42 | |
| ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE) | 2.45 | | 2.53 | 26.5 | 2.49 | 70.1 | 2.42 | 72.7 |
| GAMMA BHC (LINDANE) | 2.45 | 313 | 2.53 | 311 | 2.49 | 146 | 2.42 | 147 |
| BETA BHC (BETA HEXACHLOROCYCLOHEXANE) | 2.45 | 136 | 2.53 | 127 | 2.49 | 23 | 2.42 | 30.6 |
| DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE) | 2.45 | | 2.53 | | 2.49 | | 2.42 | |
| HEPTACHLOR | 2.45 | 151 | 2.53 | 143 | 2.49 | | 2.42 | |
| ALDRIN | 2.45 | 82.3 | 2.53 | 88.7 | 2.49 | | 2.42 | |
| OXYCHLORDANE | 2.45 | 46.9 | 2.53 | 60.6 | 2.49 | 33.4 | 2.42 | 44.6 |
| HEPTACHLOR EPOXIDE | 2.45 | 371 | 2.53 | 376 | 2.49 | 128 | 2.42 | 137 |
| BETA-CHLORDANE | 2.45 | 2,020 | 2.53 | 1,880 | 2.49 | 674 | 2.42 | 648 |
| TRANS-NONACHLOR | 2.45 | 1,190 | 2.53 | 1,070 | 2.49 | 439 | 2.42 | 421 |
| ALPHA-CHLORDANE | 2.45 | 2,270 | 2.53 | 2,440 | 2.49 | 661 | 2.42 | 665 |
| ALPHA ENDOSULFAN | 2.45 | | 2.53 | | 2.49 | | 2.42 | |
| O,P'-DDE | 2.45 | | 2.53 | | 2.49 | | 2.42 | |
| P,P'-DDE | 2.45 | | 2.53 | | 2.49 | | 2.42 | |
| DIELDRIN | 2.45 | 2,450 | 2.53 | 2,610 | 2.49 | 421 | 2.42 | 449 |
| ENDRIN | 2.45 | | 2.53 | | 2.49 | | 2.42 | |
| CIS-NONACHLOR | 2.45 | 257 | 2.53 | 290 | 2.49 | 113 | 2.42 | 115 |
| BETA ENDOSULFAN | 2.45 | | 2.53 | | 2.49 | 633 | 2.42 | 711 |
| O,P'-DDD | 2.45 | | 2.53 | | 2.49 | | 2.42 | |
| O,P'-DDT | 2.45 | | 2.53 | | 2.49 | | 2.42 | |
| P,P'-DDD | 2.45 | | 2.53 | | 2.49 | | 2.42 | |
| P,P'-DDT | 2.45 | | 2.53 | | 2.49 | | 2.42 | |
| ENDOSULFAN SULFATE | 2.45 | | 2.53 | | 2.49 | | 2.42 | |
| METHOXYCHLOR | 2.45 | 480 | 2.53 | 523 | 2.49 | | 2.42 | 174 |
| MIREX | 2.45 | | 2.53 | | 2.49 | | 2.42 | |
| ENDRIN ALDEHYDE | 2.45 | | 2.53 | | 2.49 | | 2.42 | |
| ENDRIN KETONE | 2.45 | | 2.53 | | 2.49 | | 2.42 | |

**Abbreviations**
pg/L = picograms per liter

# Appendix E

Data Evaluation Summaries and Analytical Results – SVOCs

**Table E-1**
**Summary of Detected SVOC Compounds by Method and Event**
**Phase I Report Addendum – Additional Data Evaluation**

| Analyte | Event/ Attempt | Number of Detections (Parent and Duplicate Sample) Total Concentrations (µg/L) | | | Particulates (µg/L) | | Dissolved (µg/L) | | Percent Increase for HSM Compared to Other Methods for Total Concentrations When Detected by Both Methods | | Percent Increase for LSM Compared to WW for Total Concentrations When Detected by Both Methods | Percent Increase for HSM Compared to LSM for Particulate Concentrations When Detected by Both Methods | Percent Increase for HSM Compared to LSM for Dissolved Concentrations When Detected by Both Methods |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | HSM | LSM | WW | HSM | LSM | HSM | LSM | LSM | WW | | | |
| Acetophenone | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| Bis(2-ethylhexyl)phthalate | All | 4 | 2 | 4 | 3 | 2 | 3 | 0 | 18% | 57% | -19% | -81% | |
| Butylbenzylphthalate | All | 4 | 1 | 0 | 3 | 0 | 1 | 1 | 129% | | | | 65% |
| Carbazole | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| Dibenzofuran | All | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| Diethylphthalate | All | 3 | 3 | 4 | 0 | 0 | 3 | 3 | -4% | -34% | -31% | | -4% |
| Di-n-butylphthalate | All | 2 | 1 | 1 | 2 | 0 | 1 | 1 | 193% | 47% | -50% | | 145% |
| Di-n-octylphthalate | All | 1 | 0 | 0 | 1 | 0 | 0 | 0 | | | | | |
| 4-Methylphenol | All | 2 | 1 | 0 | 1 | 0 | 2 | 1 | 52% | | | | 51% |
| Phenol | All | 1 | 1 | 0 | 0 | 0 | 1 | 1 | -29% | | | | -29% |
| Summary | | | | | | | | | | | | | |
| **50 Analytes** | **1 / 2** | **5.0** | **2.5** | **2.5** | **2.5** | **0.0** | **3.5** | **2.5** | **67%** | **38%** | **-48%** | | **45%** |
| **50 Analytes** | **2 / 2** | **3.5** | **2.0** | **2.0** | **2.5** | **1.0** | **2.0** | **1.0** | **9%** | **-11%** | **-18%** | **-81%** | **0%** |
| **50 Analytes** | **All** | **4.3** | **2.3** | **2.3** | **2.5** | **0.5** | **2.8** | **1.75** | **51%** | **19%** | **-33%** | **-81%** | **37%** |
| **Percent of Detected Analytes** | **All** | **9%** | **5%** | **5%** | **5%** | **1%** | **6%** | **4%** | | | | | |

**Conclusions**

Samples were analyzed for a total of 50 SVOC compounds, however, only SVOC compounds that were positively identified during analysis are presented.
HSM has a higher frequency of detection for both total (9%), particulate (5%), and dissolved (6%) concentrations.
Where detected in both methods, HSM total concentrations are on average 51% greater than total LSM concentrations.
Where detected in both methods, HSM total concentrations are on average 19% greater than WW concentrations.
Where detected in both methods, LSM total concentrations are 33% lower than WW concentrations.
Where detected in both methods, HSM particulate concentrations are on average lower than LSM particulate concentrations (-81%).
Where detected in both methods, HSM dissolved concentrations are on average 37% greater than LSM dissolved concentrations.

**Abbreviations**

µg/L = micrograms per liter
% = percent
HSM = high solids mass
LSM = low solids mass
WW = whole water

**Table E-2**
**Statistical Comparison of the Number of Detected SVOC Compounds by Method and Event**
**Phase I Report Addendum – Additional Data Evaluation**

| Event | Number of Detections (Total Water Concentration) | | | Maximum Possible Number of Detections[1] | Chi-Square Test (p-value)[2] | | |
|---|---|---|---|---|---|---|---|
| | HSM | LSM | WW | | HSM vs. LSM | HSM vs. WW | LSM vs. WW |
| **1/2** | 10 | 5 | 5 | 100 | 0.180 | 0.180 | 1.000 |
| **2/2** | 7 | 4 | 4 | 100 | 0.352 | 0.352 | 1.000 |
| **All** | 17 | 9 | 9 | 200 | 0.105 | 0.105 | 1.000 |

**Notes**

[1] Total number of detections for event includes 2 duplicates and 50 compounds.

[2] A p-value less than 0.05 is considered significant and is shaded indicating that the number of detects is significantly different between methods.

**Conclusion**

There is some evidence that HSM method is better than both other methods with respect to the number of detected compounds, however this apparent difference was not statistically significant at alpha = 0.05
The LSM and WW methods are similar with respect to the number of detected compounds.

**Abbreviations**

HSM = high solids mass
LSM = low solids mass
WW = whole water

**Table E-3**
**HSM Particulate Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| | HSM Particulate Sample Collection | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Event 1 Attempt 2 (7-1-13 PR116) | | | | Event 2 Attempt 2 (12-07-13 PR135) | | | |
| | PR1CSOCLYHP-01B | | PR1HPDUP-01B | | PR1CSOCLYHP-02B | | PR1HPDUP-02B | |
| Wet weight (gram) | 29.8 | | 29.9 | | 30.8 | | 29.7 | |
| % Solids | 35 | | 33 | | 42 | | 41 | |
| **Compound Identified** | **Sample Result ug/Kg** | **Converted Sample Result ug/L** | **Sample Result ug/Kg** | **Converted Sample Result ug/L** | **Sample Result ug/Kg** | **Converted Sample Result ug/L** | **Sample Result ug/Kg** | **Converted Sample Result ug/L** |
| 4-methylphenol | 0 | 0 | 4,000 | 0.117 | 0 | 0 | 0 | 0 |
| Di-n-butylphthalate | 13,000 | 0.405 | 4,200 | 0.123 | 0 | 0 | 0 | 0 |
| Butylbenzylphthalate | | | 37,000 | 1.09 | 1,200 | 0.0447 | 1,400 | 0.0509 |
| Bis(2-ethylhexyl)phthalate | | | 25,000 | 0.734 | 12,000 | 0.447 | 11,000 | 0.400 |
| Dibenzofuran | | | | | 0 | 0 | 0 | 0 |
| Diethylphthalate | | | | | 0 | 0 | | |
| Carbazole | | | | | 0 | 0 | 0 | 0 |
| Di-n-octylphthalate | | | | | 2,000 | 0.0745 | | |

Note:
A "0" value in the sample result column represents a result that was qualified by the lab as "G". A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate.
A "null" value in the sample result column represents a non-detect (ND) result.

**Abbreviations**
µg/L = micrograms per liter
µg/Kg = micrograms per kilogram

**Table E-4**
**HSM Dissolved Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| Compound Identified | HSM Dissolved Sample Collection | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Event 1 Attempt 2 (07-01-13 PR117) | | | | Event 2 Attempt 2 (12-07-13 PR138) | | | |
| | PR1CSOCLYHD-01B | | PR1HDDUP-01B | | PR1CSOCLYHD-02B | | PR1HDDUP-02B | |
| | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L |
| Phenol | 2.42 | 1.7 | 2.63 | 0 | 2.31 | 0 | 2.24 | 0 |
| 4-Methylphenol | 2.42 | 5.4 | 2.63 | 8.6 | 2.31 | | 2.24 | |
| Di-n-butylphthalate | 2.42 | 2.7 | 2.63 | 0 | 2.31 | 0 | 2.24 | 0 |
| Butylbenzylphthalate | 2.42 | 2.8 | 2.63 | | 2.31 | | 2.24 | |
| Bis(2-ethylhexyl)phthalate | 2.42 | 29 | 2.63 | | 2.31 | 2.1 | 2.24 | 2.3 |
| Diethylphthalate | 2.42 | | 2.63 | 3.4 | 2.31 | 1.3 | 2.24 | 1.1 |
| Acetophenone | 2.42 | | 2.63 | | 2.31 | 0 | 2.24 | |

Note:
A "0" value in the sample result column represents a result that was qualified by the lab as "G". A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate.
A "null" value in the sample result column represents a non-detect (ND) result.
**Abbreviations**
µg/L = micrograms per liter

**Table E-5**
**LSM Particulate Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| | LSM Particulate Sample Collection | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Event 1 Attempt 2 (07-01-13 PR119) | | | | | | Event 2 Attempt 2 (12-11-13 PR140) | | | | | |
| | PR1CSOCLYLP-01B | | | PR1LPDUP-01B | | | PR1CSOCLYLP-02B | | | PR1LPDUP-02B | | |
| TSS (mg/L) | 64.8 | | | 67.1 | | | 8.4 | | | 13.5 | | |
| Total Liters Filtered (L) | 2.363 | | | 2.420 | | | 2.418 | | | 2.572 | | |
| **Compound Identified** | **Weight gram** | **Sample Result ug/Kg** | **Converted Sample Result ug/L** | **Weight gram** | **Sample Result ug/Kg** | **Converted Sample Result ug/L** | **Weight gram** | **Sample Result ug/Kg** | **Converted Sample Result ug/L** | **Weight gram** | **Sample Result ug/Kg** | **Converted Sample Result ug/L** |
| Di-n-butylphthalate | 0.154 | 0 | 0 | 0.163 | 0 | 0 | 0.0203 | | | 0.0347 | | |
| Diethylphthalate | 0.154 | | | 0.163 | 0 | 0 | 0.0203 | | | 0.0347 | | |
| Bis(2-ethylhexyl)phthalate | 0.154 | | | 0.163 | | | 0.0203 | 240,000 | 2 | 0.0347 | 180,000 | 2.43 |

Note:
A "0" value in the sample result column represents a result that was qualified by the lab as "G". A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate.
A "null" value in the sample result column represents a non-detect (ND) result.

**Abbreviations**

µg/Kg = micrograms per kilogram
mg/L = milligrams per liter

**Table E-6**
**LSM Dissolved Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| Compound Identified | LSM Dissolved Sample Collection | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Event 1 Attempt 2 (07-01-13 PR120) | | | | Event 2 Attempt 2 (12-11-13 PR141) | | | |
| | PR1CSOCLYLD-01B | | PR1LDDUP-01B | | PR1CSOCLYLD-02B | | PR1LDDUP-02B | |
| | Volume L | Sample Result ug/L | Volume L | Sample Result ug/L | Volume L | Sample Result ug/L | Volume L | Sample Result ug/L |
| Phenol | 2.6 | 2.4 | 2.52 | | 2.42 | 0 | 2.57 | 0 |
| 4-Methylphenol | 2.6 | 9.3 | 2.52 | | 2.42 | | 2.57 | |
| Di-n-butylphthalate | 2.6 | 0 | 2.52 | 1.1 | 2.42 | 0 | 2.57 | 0 |
| Acetophenone | 2.6 | | 2.52 | 0 | 2.42 | 0 | 2.57 | 0 |
| Diethylphthalate | 2.6 | | 2.52 | 3.7 | 2.42 | 1.3 | 2.57 | 1.1 |
| Butylbenzylphthalate | 2.6 | | 2.52 | 1.7 | 2.42 | | 2.57 | |

Note:
A "0" value in the sample result column represents a result that was qualified by the lab as "G". A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate.
A "null" value in the sample result column represents a non-detect (ND) result.

**Abbreviations**

µg/L = micrograms per liter

**Table E-7**
**Whole Water Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| Compound Identified | Whole Water Sample Collection | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Event 1 Attepmt 2 (07-01-13 PR115) | | | | Event 2 Attempt 2 (12-07-13 PR134) | | | |
| | PR1CSOCLYWW-01B | | PR1WWDUP-01B | | PR1CSOCLYWW-02B | | PR1WWDUP-02B | |
| | Volume L | Sample Result ug/L | Volume L | Sample Result ug/L | Volume L | Sample Result ug/L | Volume L | Sample Result ug/L |
| 4-Methylphenol | 2.37 | 0 | 2.5 | | 2.36 | | 2.27 | |
| Diethylphthalate | 2.37 | 3.1 | 2.5 | 3.7 | 2.36 | 1.3 | 2.27 | 1.6 |
| Di-n-butylphthalate | 2.37 | 2.2 | 2.5 | 0 | 2.36 | 0 | 2.27 | 0 |
| Bis(2-ethylhexyl)phthalate | 2.37 | 5.3 | 2.5 | 8.3 | 2.36 | 2.5 | 2.27 | 3 |
| Phenol | 2.37 | | 2.5 | 0 | 2.36 | | 2.27 | 0 |
| Acetophenone | 2.37 | | 2.5 | | 2.36 | 0 | 2.27 | |

Note:
A "0" value in the sample result column represents a result that was qualified by the lab as "G". A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate.
A "null" value in the sample result column represents a non-detect (ND) result.

**Abbreviations**
µg/L = micrograms per liter

**Appendix F**

Data Evaluation Summaries and Analytical Results – SVOC SIM

**Table F-1**
**Summary of Detected SVOC SIM Compounds by Method and Event**
**Phase I Report Addendum – Additional Data Evaluation**

| Analyte | Event/ Attempt | Number of Detections (Parent and Duplicate Sample): Total Concentrations (μg/L) | | | Particulates (μg/L) | | Dissolved (μg/L) | | Percent Increase for HSM Compared to Other Methods for Total Concentrations When Detected by Both Methods | | Percent Increase for LSM Compared to WW for Total Concentrations When Detected by Both Methods | Percent Increase for HSM Compared to LSM for Particulate Concentrations When Detected by Both Methods | Percent Increase for HSM Compared to LSM for Dissolved Concentrations When Detected by Both Methods |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | HSM | LSM | WW | HSM | LSM | HSM | LSM | LSM | WW | | | |
| Naphthalene | All | 4 | 4 | 3 | 2 | 0 | 3 | 4 | -37% | -46% | -17% | | -47% |
| 2-Methylnaphthalene | All | 4 | 2 | 4 | 4 | 0 | 4 | 2 | -23% | -36% | 18% | | -24% |
| Acenaphthylene | All | 0 | 2 | 0 | 0 | 0 | 0 | 2 | | | | | |
| Acenaphthene | All | 3 | 4 | 3 | 2 | 0 | 3 | 4 | -3% | -47% | -1% | | -11% |
| Fluorene | All | 4 | 4 | 4 | 3 | 1 | 4 | 4 | -20% | -45% | -32% | -94% | 35% |
| Phenanthrene | All | 4 | 2 | 4 | 4 | 2 | 4 | 2 | -82% | -53% | -37% | -94% | 51% |
| Anthracene | All | 3 | 2 | 3 | 3 | 2 | 2 | 2 | -84% | -87% | -44% | -95% | -26% |
| Fluoranthene | All | 4 | 4 | 4 | 4 | 4 | 3 | 2 | -53% | -71% | -38% | -73% | 84% |
| Pyrene | All | 4 | 4 | 4 | 4 | 4 | 4 | 2 | -14% | -60% | -42% | -77% | 153% |
| Benzo(a)anthracene | All | 4 | 2 | 2 | 4 | 2 | 2 | 1 | -90% | -93% | -36% | -95% | 191% |
| Chrysene | All | 4 | 2 | 2 | 4 | 2 | 2 | 2 | -89% | -93% | -31% | -95% | 196% |
| Benzo(b)fluoranthene | All | 4 | 4 | 4 | 4 | 4 | 2 | 1 | -75% | -75% | -14% | -78% | 301% |
| Benzo(k)fluoranthene | All | 4 | 4 | 4 | 4 | 4 | 2 | 1 | -75% | -79% | -21% | -78% | 351% |
| Benzo(a)pyrene | All | 4 | 4 | 4 | 4 | 4 | 2 | 0 | -71% | -75% | -23% | -74% | |
| Indeno(1,2,3-cd)pyrene | All | 4 | 3 | 2 | 4 | 3 | 0 | 0 | -53% | -97% | -43% | -53% | |
| Dibenzo(a,h)anthracene | All | 4 | 2 | 1 | 4 | 2 | 0 | 0 | -94% | -97% | -39% | -94% | |
| Benzo(g,h,i)perylene | All | 4 | 4 | 3 | 4 | 4 | 0 | 0 | -75% | -55% | 28% | -75% | |
| 1-Methylnaphthalene | All | 4 | 4 | 4 | 3 | 0 | 4 | 4 | -9% | -29% | -16% | | -11% |
| Benzo[e]pyrene | All | 4 | 4 | 4 | 4 | 4 | 2 | 1 | -74% | -75% | -17% | -76% | 239% |
| Perylene | All | 4 | 2 | 2 | 4 | 2 | 0 | 0 | -95% | -97% | -44% | -95% | |
| 3,6-Dimethylphenanthrene | All | 3 | 2 | 1 | 3 | 2 | 2 | 0 | 46% | -91% | -97% | -76% | |
| 1-Methylanthracene | All | 4 | 4 | 4 | 4 | 4 | 4 | 4 | -54% | -34% | 21% | -92% | 116% |
| 1-Methylfluoranthene | All | 4 | 4 | 2 | 4 | 4 | 2 | 1 | -83% | -90% | -26% | -87% | 101% |
| 1-Methylpyrene | All | 3 | 2 | 1 | 3 | 2 | 0 | 0 | -95% | -98% | -60% | -95% | |
| 2,6-Dimethylnaphthalene | All | 4 | 4 | 4 | 4 | 3 | 4 | 4 | 12% | -24% | -30% | -90% | 77% |
| 2,3,5-Trimethylnaphthalene | All | 4 | 4 | 4 | 4 | 1 | 4 | 4 | 16% | -42% | -45% | -94% | 30% |
| 1,1'-Biphenyl | All | 1 | 1 | 1 | 0 | 0 | 1 | 1 | | -14% | | | |
| Dibenzofuran | All | 2 | 2 | 1 | 2 | 0 | 2 | 2 | 140% | -76% | -90% | | 113% |
| 1-Methylphenanthrene | All | 4 | 4 | 4 | 3 | 1.0 | 4 | 4 | 18% | -36% | -33% | -97% | 258% |
| Dibenzothiophene | All | 4 | 2.0 | 4 | 2.0 | 0.0 | 4.0 | 2.0 | 38% | -41% | -82% | | 31% |
| **Summary** | | | | | | | | | | | | | |
| **30 Analytes** | **1 / 2** | **25.5** | **18** | **18** | **21.5** | **11.5** | **12.5** | **9** | **-26%** | **-28%** | **6%** | **-65%** | **7%** |
| **30 Analytes** | **2 / 2** | **28** | **28** | **25.5** | **27.5** | **19** | **22.5** | **19** | **-44%** | **-83%** | **-47%** | **-93%** | **130%** |
| **30 Analytes** | **All** | **26.75** | **23** | **21.75** | **24.5** | **15.25** | **17.5** | **14** | **-37%** | **-60%** | **-27%** | **-83%** | **92%** |
| **Percent of Detected Analytes** | **All** | **89%** | **77%** | **73%** | **82%** | **51%** | **58%** | **47%** | | | | | |

**Conclusions**

HSM has a higher frequency of detection for both total (89%), particulate (82%), and dissolved (58%) concentrations.
Where detected in both methods, HSM total concentrations are 37% lower than total LSM concentrations although there is large variability among events
Where detected in both methods, HSM total concentrations are 60% lower than WW concentrations however there is great variability among events
Where detected in both methods, LSM total concentrations are 27% lower than WW concentrations.
Where detected in both methods, HSM particulate concentrations are on average lower than LSM particulate concentrations (-83%).
Where detected in both methods, HSM dissolved concentrations are on average 92% greater than LSM dissolved concentrations.

**Abbreviations**

μg/L = micrograms per liter
% = percent
HSM = high solids mass
LSM = low solids mass
WW = whole water

**Table F-2**
**Statistical Comparison of the Number of Detected SVOC SIM Compounds by Method and Event**
**Phase I Report Addendum – Additional Data Evaluation**

| Event | Number of Detections (Total Water Concentration) | | | Maximum Possible Number of Detections[1] | Chi-Square Test (p-value)[2] | | |
|---|---|---|---|---|---|---|---|
| | HSM | LSM | WW | | HSM vs. LSM | HSM vs. WW | LSM vs. WW |
| **1/2** | 51 | 36 | 36 | 60 | 0.002 | 0.002 | 1.000 |
| **2/2** | 56 | 56 | 51 | 60 | 1.000 | 0.001 | 0.142 |
| **All** | 107 | 92 | 87 | 120 | 0.010 | 0.001 | 0.459 |

<u>**Notes**</u>
[1] Total number of detections for event includes 2 duplicates and 30 compounds.
[2] A p-value less than 0.05 is considered significant and is shaded indicating that the number of detects is significantly different between methods.

<u>**Conclusion**</u>
The HSM method is better than both other methods with respect to the number of detected compounds.
The LSM and WW methods are similar with respect to the number of detected compounds.

<u>**Abbreviations**</u>
HSM = high solids mass
LSM = low solids mass
WW = whole water

**Table F-3**
**HSM Particulate Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| | HSM Particulate Sample Collection | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Event 1 Attempt 2 (7-1-13 PR116) | | | | Event 2 Attempt 2 (12-7-13 PR135) | | | |
| | PR1CSOCLYHP-01B | | PR1HPDUP-01B | | PR1CSOCLYHP-02B | | PR1HPDUP-02B | |
| Wet weight (gram) | 30.5 | | 30.5 | | 30.1 | | 30.1 | |
| % Solids | 35 | | 33 | | 42 | | 41 | |
| **Compound Identified** | **Sample Result ug/kg** | **Converted Sample Result ug/L** | **Sample Result ug/kg** | **Converted Sample Result ug/L** | **Sample Result ug/kg** | **Converted Sample Result ug/L** | **Sample Result ug/kg** | **Converted Sample Result ug/L** |
| Naphthalene | | | | | 90 | 0.00335 | 410 | 0.0149 |
| 2-Methylnaphthalene | **110** | **0.00342** | **71** | 0.002083377 | 76 | 0.00283 | 73 | 0.00266 |
| Acenaphthylene | | | | | | | | |
| Acenaphthene | | | | | 52 | 0.00194 | 40 | 0.00146 |
| Fluorene | **75** | **0.00233** | | | 80 | 0.00298 | 66 | 0.00240 |
| Phenanthrene | **710** | **0.0221** | **300** | 0.00880 | 790 | 0.0294 | 590 | 0.0215 |
| Anthracene | **120** | **0.00373** | | | 100 | 0.00373 | 82 | 0.0030 |
| Fluoranthene | **1,900** | **0.0591** | **770** | 0.0226 | 1,000 | 0.0373 | 1100 | 0.0400 |
| Pyrene | **1,000** | **0.0311** | **680** | 0.0200 | 940 | 0.0350 | 810 | 0.0295 |
| Benzo(a)anthracene | **780** | **0.0243** | **310** | 0.00910 | 580 | 0.0216 | 470 | 0.0171 |
| Chrysene | **920** | **0.0286** | **410** | 0.0120 | 940 | 0.0350 | 770 | 0.0280 |
| Benzo(b)fluoranthene | **890** | **0.0277** | **390** | 0.0114 | 830 | 0.0309 | 720 | 0.0262 |
| Benzo(k)fluoranthene | **730** | **0.0227** | **290** | 0.00851 | 750 | 0.0280 | 630 | 0.0229 |
| Benzo(a)pyrene | **750** | **0.0233** | **280** | 0.00822 | 560 | 0.0209 | 470 | 0.0171 |
| Indeno(1,2,3-cd)pyrene | **400** | **0.0124** | **180** | 0.00528 | 540 | 0.0201 | 420 | 0.0153 |
| Dibenzo(a,h)anthracene | **120** | **0.00373** | **66** | 0.00194 | 200 | 0.00745 | 150 | 0.00546 |
| Benzo(g,h,i)perylene | **410** | **0.0128** | **220** | 0.00646 | 650 | 0.0242 | 540 | 0.0196 |
| 1-Methylnaphthalene | **68** | **0.00212** | | | 54 | 0.00201 | 49 | 0.00178 |
| Benzo[e]pyrene | **640** | **0.0199** | **270** | 0.00792 | 650 | 0.0242 | 570 | 0.0207 |
| Perylene | **200** | **0.00622** | **77** | 0.00226 | 170 | 0.00634 | 140 | 0.00509 |
| 3,6-Dimethylphenanthrene | **54** | **0.00168** | | | 53 | 0.00198 | 37 | 0.00135 |
| 1-Methylanthracene | **260** | **0.00809** | **91** | 0.00267 | 110 | 0.00410 | 80 | 0.00291 |
| 1-Methylfluoranthene | **180** | **0.00560** | **110** | 0.00323 | 260 | 0.00969 | 210 | 0.00764 |
| 1-Methylpyrene | **87** | **0.00271** | | | 74 | 0.00276 | 64 | 0.00233 |
| 2,6-Dimethylnaphthalene | **150** | **0.00467** | **100** | 0.00293 | 70 | 0.00261 | 77 | 0.00280 |
| 2,3,5-Trimethylnaphthalene | **120** | **0.00373** | **76** | 0.00223 | 53 | 0.00198 | 60 | 0.00218 |
| Dibenzofuran | | | | | 48 | 0.00179 | 37 | 0.00135 |
| 1-Methylphenanthrene | **190** | **0.00591** | | | 94 | 0.00350 | 120 | 0.00437 |
| Dibenzothiophene | **51** | **0.00159** | | | 52 | 0.00194 | 0 | 0 |

Note:
A "0" value in the sample result column represents a result that was qualified by the lab as "G". A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate.
A "null" value in the sample result column represents a non-detect (ND) result.

**Abbreviations**

µg/L = micrograms per liter
µg/Kg = micrograms per kilogram

**Table F-4**
**HSM Dissolved Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| Compound Identified | HSM Dissolved Sample Collection | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Event 1 Attempt 2 (07-01-13 PR117) | | | | Event 2 Attempt 2 (12-07-13 PR138) | | | |
| | PR1CSOCLYHD-01B | | PR1HDDUP-01B | | PR1CSOCLYHD-02B | | PR1HDDUP-02B | |
| | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L |
| Naphthalene | 2.61 | 0.24 | 2.52 | 0.23 | 2.26 | 0.035 | 2.28 | |
| 2-Methylnaphthalene | 2.61 | 0.34 | 2.52 | 0.31 | 2.26 | 0.052 | 2.28 | 0.049 |
| Acenaphthylene | 2.61 | | 2.52 | | 2.26 | 0 | 2.28 | 0 |
| Acenaphthene | 2.61 | 0.019 | 2.52 | | 2.26 | 0.015 | 2.28 | 0.013 |
| Fluorene | 2.61 | 0.025 | 2.52 | 0.020 | 2.26 | 0.030 | 2.28 | 0.028 |
| Phenanthrene | 2.61 | 0.076 | 2.52 | 0.063 | 2.26 | 0.064 | 2.28 | 0.060 |
| Anthracene | 2.61 | | 2.52 | | 2.26 | 0.011 | 2.28 | 0.0089 |
| Fluoranthene | 2.61 | 0.054 | 2.52 | | 2.26 | 0.069 | 2.28 | 0.060 |
| Pyrene | 2.61 | 0.083 | 2.52 | 0.069 | 2.26 | 0.056 | 2.28 | 0.058 |
| Benzo(a)anthracene | 2.61 | | 2.52 | | 2.26 | 0.023 | 2.28 | 0.020 |
| Chrysene | 2.61 | | 2.52 | | 2.26 | 0.034 | 2.28 | 0.032 |
| Benzo(b)fluoranthene | 2.61 | | 2.52 | | 2.26 | 0.033 | 2.28 | 0.032 |
| Benzo(k)fluoranthene | 2.61 | | 2.52 | | 2.26 | 0.029 | 2.28 | 0.026 |
| Benzo(a)pyrene | 2.61 | | 2.52 | | 2.26 | 0.020 | 2.28 | 0.018 |
| 1-Methylnaphthalene | 2.61 | 0.23 | 2.52 | 0.21 | 2.26 | 0.053 | 2.28 | 0.047 |
| Benzo[e]pyrene | 2.61 | | 2.52 | | 2.26 | 0.021 | 2.28 | 0.019 |
| Perylene | 2.61 | | 2.52 | | 2.26 | 0 | 2.28 | 0 |
| 3,6-Dimethylphenanthrene | 2.61 | | 2.52 | | 2.26 | 0.011 | 2.28 | 0.0095 |
| 1-Methylanthracene | 2.61 | 0.050 | 2.52 | 0.043 | 2.26 | 0.022 | 2.28 | 0.016 |
| 1-Methylfluoranthene | 2.61 | | 2.52 | | 2.26 | 0.016 | 2.28 | 0.013 |
| 1-Methylpyrene | 2.61 | | 2.52 | | 2.26 | 0 | 2.28 | 0 |
| 2,6-Dimethylnaphthalene | 2.61 | 0.14 | 2.52 | 0.12 | 2.26 | 0.092 | 2.28 | 0.087 |
| 2,3,5-Trimethylnaphthalene | 2.61 | 0.070 | 2.52 | 0.074 | 2.26 | 0.052 | 2.28 | 0.011 |
| 1,1'-Biphenyl | 2.61 | 0.019 | 2.52 | | 2.26 | | 2.28 | |
| Dibenzofuran | 2.61 | | 2.52 | | 2.26 | 0.016 | 2.28 | 0.0094 |
| 1-Methylphenanthrene | 2.61 | 0.069 | 2.52 | 0.061 | 2.26 | 0.036 | 2.28 | 0.032 |
| Dibenzothiophene | 2.61 | 0.026 | 2.52 | 0.025 | 2.26 | 0.018 | 2.28 | 0.016 |

Note:
A "0" value in the sample result column represents a result that was qualified by the lab as "G". A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate.
A "null" value in the sample result column represents a non-detect (ND) result.

**Abbreviations**

μg/L = micrograms per liter

**Table F-5**
**LSM Particulate Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| | LSM Particulate Sample Collection | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Event 1 Attempt 2 (07-05-13 PR119) | | | | | | Event 2 Attempt 2 (12-11-13 PR140) | | | | | |
| | PR1CSOCLYLP-01B | | | PR1LPDUP-01B | | | PR1CSOCLYLP-02B | | | PR1LPDUP-02B | | |
| TSS (mg/L) | 64.8 | | | 67.1 | | | 8.4 | | | 13.5 | | |
| Total Liters Filtered (L) | 2.53 | | | 2.46 | | | 2.396 | | | 2.502 | | |
| **Compound Identified** | **Weight gram** | **Sample Result ug/Kg** | **Converted Sample Result ug/L** | **Weight gram** | **Sample Result ug/Kg** | **Converted Sample Result ug/L** | **Weight gram** | **Sample Result ug/Kg** | **Converted Sample Result ug/L** | **Weight gram** | **Sample Result ug/Kg** | **Converted Sample Result ug/L** |
| Naphthalene | 0.164 | 0 | 0 | 0.165 | 0 | 0 | 0.0204 | | | 0.0338 | | |
| 2-Methylnaphthalene | 0.164 | | | 0.165 | 0 | 0 | 0.0204 | | | 0.0338 | | |
| Acenaphthylene | 0.164 | | | 0.165 | | | 0.0204 | 0 | 0 | 0.0338 | 0 | 0 |
| Fluorene | 0.164 | | | 0.165 | | | 0.0204 | | | 0.0338 | 6,900 | 0.0932 |
| Phenanthrene | 0.164 | | | 0.165 | | | 0.0204 | 2,500 | 0.0210 | 0.0338 | 65,000 | 0.878 |
| Anthracene | 0.164 | | | 0.165 | | | 0.0204 | 870 | 0.00731 | 0.0338 | 10,000 | 0.135 |
| Fluoranthene | 0.164 | 870 | 0.0564 | 0.165 | 1,600 | 0.107 | 0.0204 | 9,100 | 0.0764 | 0.0338 | 130,000 | 1.76 |
| Pyrene | 0.164 | 930 | 0.0603 | 0.165 | 1,000 | 0.0671 | 0.0204 | 8,400 | 0.0706 | 0.0338 | 91,000 | 1.23 |
| Benzo(a)anthracene | 0.164 | | | 0.165 | | | 0.0204 | 6,700 | 0.0563 | 0.0338 | 54,000 | 0.729 |
| Chrysene | 0.164 | | | 0.165 | | | 0.0204 | 8,600 | 0.0722 | 0.0338 | 83,000 | 1.12 |
| Benzo(b)fluoranthene | 0.164 | 630 | 0.0408 | 0.165 | 880 | 0.0590 | 0.0204 | 7,200 | 0.0605 | 0.0338 | 82,000 | 1.11 |
| Benzo(k)fluoranthene | 0.164 | 500 | 0.0324 | 0.165 | 720 | 0.0483 | 0.0204 | 8,500 | 0.0714 | 0.0338 | 64,000 | 0.864 |
| Benzo(a)pyrene | 0.164 | 450 | 0.0292 | 0.165 | 540 | 0.0362 | 0.0204 | 6,600 | 0.0554 | 0.0338 | 56,000 | 0.756 |
| Indeno(1,2,3-cd)pyrene | 0.164 | | | 0.165 | 300 | 0.0201 | 0.0204 | 5,100 | 0.0428 | 0.0338 | 44,000 | 0.594 |
| Dibenzo(a,h)anthracene | 0.164 | | | 0.165 | | | 0.0204 | 1,800 | 0.0151 | 0.0338 | 16,000 | 0.216 |
| Benzo(g,h,i)perylene | 0.164 | 310 | 0.0201 | 0.165 | 340 | 0.0228 | 0.0204 | 6,200 | 0.0521 | 0.0338 | 55,000 | 0.743 |
| Benzo[e]pyrene | 0.164 | 420 | 0.0272 | 0.165 | 550 | 0.0369 | 0.0204 | 7,300 | 0.0613 | 0.0338 | 61,000 | 0.824 |
| Perylene | 0.164 | | | 0.165 | | | 0.0204 | 2,000 | 0.0168 | 0.0338 | 15,000 | 0.203 |
| 3,6-Dimethylphenanthrene | 0.164 | | | 0.165 | 330 | 0.0221 | 0.0204 | 500 | 0.0042 | 0.0338 | 0 | 0 |
| 1-Methylanthracene | 0.164 | 620 | 0.0402 | 0.165 | 630 | 0.0423 | 0.0204 | 1,700 | 0.0143 | 0.0338 | 15,000 | 0.203 |
| 1-Methylfluoranthene | 0.164 | 310 | 0.0201 | 0.165 | 320 | 0.0215 | 0.0204 | 2,700 | 0.0227 | 0.0338 | 24,000 | 0.324 |
| 1-Methylpyrene | 0.164 | | | 0.165 | | | 0.0204 | 840 | 0.00706 | 0.0338 | 7,100 | 0.0959 |
| 2,6-Dimethylnaphthalene | 0.164 | 480 | 0.0311 | 0.165 | 450 | 0.0302 | 0.0204 | | | 0.0338 | 5,400 | 0.073 |
| 2,3,5-Trimethylnaphthalene | 0.164 | 0 | 0 | 0.165 | 700 | 0.0470 | 0.0204 | 0 | 0 | 0.0338 | 0 | 0 |
| 1-Methylphenanthrene | 0.164 | | | 0.165 | | | 0.0204 | 0 | 0 | 0.0338 | 10,000 | 0.135 |
| Dibenzothiophene | 0.164 | | | 0.165 | | | 0.0204 | | | 0.0338 | 0 | 0 |

Note:
A "0" value in the sample result column represents a result that was qualified by the lab as "G". A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate.
A "null" value in the sample result column represents a non-detect (ND) result.

**Abbreviations**
µg/Kg = micrograms per kilogram
µg/L = micrograms per liter
mg/L = milligrams per liter

**Table F-6**
**LSM Dissolved Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| | LSM Dissolved Sample Collection | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Event 1 Attempt 2 (07-05-13 PR120) | | | | Event 2 Attempt 2 (12-11-13 PR141) | | | |
| | PR1CSOCLYLD-01B | | PR1LDDUP-01B | | PR1CSOCLYLD-02B | | PR1LDDUP-02B | |
| **Compound Identified** | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L |
| Naphthalene | 2.46 | 0.34 | 2.46 | 0.37 | 2.43 | 0.051 | 2.5 | 0.037 |
| 2-Methylnaphthalene | 2.46 | 0.41 | 2.46 | 0.44 | 2.43 | | 2.5 | |
| Acenaphthylene | 2.46 | | 2.46 | | 2.43 | 0.0058 | 2.5 | 0.018 |
| Acenaphthene | 2.46 | 0.022 | 2.46 | 0.020 | 2.43 | 0.014 | 2.5 | 0.0072 |
| Fluorene | 2.46 | 0.021 | 2.46 | 0.022 | 2.43 | 0.021 | 2.5 | 0.014 |
| Phenanthrene | 2.46 | | 2.46 | | 2.43 | 0.038 | 2.5 | 0.044 |
| Anthracene | 2.46 | | 2.46 | | 2.43 | 0.015 | 2.5 | 0.012 |
| Fluoranthene | 2.46 | | 2.46 | | 2.43 | 0.039 | 2.5 | 0.031 |
| Pyrene | 2.46 | | 2.46 | | 2.43 | 0.026 | 2.5 | 0.019 |
| Benzo(a)anthracene | 2.46 | | 2.46 | | 2.43 | 0.0074 | 2.5 | 0 |
| Chrysene | 2.46 | | 2.46 | | 2.43 | 0.014 | 2.5 | 0.0083 |
| Benzo(b)fluoranthene | 2.46 | | 2.46 | | 2.43 | 0.0081 | 2.5 | 0 |
| Benzo(k)fluoranthene | 2.46 | | 2.46 | | 2.43 | 0.0061 | 2.5 | 0 |
| Benzo(a)pyrene | 2.46 | | 2.46 | | 2.43 | 0 | 2.5 | 0 |
| Indeno(1,2,3-cd)pyrene | 2.46 | | 2.46 | | 2.43 | 0 | 2.5 | 0 |
| Dibenzo(a,h)anthracene | 2.46 | | 2.46 | | 2.43 | 0 | 2.5 | |
| Benzo(g,h,i)perylene | 2.46 | | 2.46 | | 2.43 | 0 | 2.5 | 0 |
| 1-Methylnaphthalene | 2.46 | 0.28 | 2.46 | 0.31 | 2.43 | 0.063 | 2.5 | 0.034 |
| Benzo[e]pyrene | 2.46 | | 2.46 | | 2.43 | 0.0059 | 2.5 | 0 |
| Perylene | 2.46 | | 2.46 | | 2.43 | 0 | 2.5 | 0 |
| 3,6-Dimethylphenanthrene | 2.46 | | 2.46 | | 2.43 | 0 | 2.5 | 0 |
| 1-Methylanthracene | 2.46 | 0.031 | 2.46 | 0.030 | 2.43 | 0.0087 | 2.5 | 0.0049 |
| 1-Methylfluoranthene | 2.46 | | 2.46 | | 2.43 | 0.0072 | 2.5 | 0 |
| 1-Methylpyrene | 2.46 | | 2.46 | | 2.43 | 0 | 2.5 | 0 |
| 2,6-Dimethylnaphthalene | 2.46 | 0.10 | 2.46 | 0.10 | 2.43 | 0.053 | 2.5 | 0.027 |
| 2,3,5-Trimethylnaphthalene | 2.46 | 0.054 | 2.46 | 0.054 | 2.43 | 0.036 | 2.5 | 0.014 |
| 1,1'-Biphenyl | 2.46 | | 2.46 | | 2.43 | | 2.5 | 0.0049 |
| Dibenzofuran | 2.46 | | 2.46 | | 2.43 | 0.0073 | 2.5 | 0.0046 |
| 1-Methylphenanthrene | 2.46 | 0.037 | 2.46 | 0.037 | 2.43 | 0.0069 | 2.5 | 0.0057 |
| Dibenzothiophene | 2.46 | | 2.46 | | 2.43 | 0.011 | 2.5 | 0.015 |

Note:
A "0" value in the sample result column represents a result that was qualified by the lab as "G". A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate.
A "null" value in the sample result column represents a non-detect ND result.

**Abbreviations**

µg/L = micrograms per liter

**Table F-7**
**Whole Water Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| | Whole Water Sample Collection | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Event 1 Attepmt 2 (07-01-13 PR115) | | | | Event 2 Attempt 2 (12-07-134 PR134) | | | |
| | PR1CSOCLYWW-01B | | PR1WWDUP-01B | | PR1CSOCLYWW-01B | | PR1WWDUP-01B | |
| **Compound Identified** | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L |
| Naphthalene | 2.49 | 0.26 | 2.42 | 0.30 | 2.30 | | 2.26 | 0.23 |
| 2-Methylnaphthalene | 2.49 | 0.32 | 2.42 | 0.40 | 2.30 | 0.044 | 2.26 | 0.25 |
| Acenaphthylene | 2.49 | | 2.42 | | 2.30 | 0 | 2.26 | 0 |
| Acenaphthene | 2.49 | 0.023 | 2.42 | | 2.30 | 0.013 | 2.26 | 0.12 |
| Fluorene | 2.49 | 0.031 | 2.42 | 0.028 | 2.30 | 0.026 | 2.26 | 0.18 |
| Phenanthrene | 2.49 | 0.11 | 2.42 | 0.097 | 2.30 | 0.065 | 2.26 | 1.5 |
| Anthracene | 2.49 | 0.022 | 2.42 | | 2.30 | 0.013 | 2.26 | 0.29 |
| Fluoranthene | 2.49 | 0.15 | 2.42 | 0.12 | 2.30 | 0.082 | 2.26 | 2.9 |
| Pyrene | 2.49 | 0.15 | 2.42 | 0.14 | 2.30 | 0.066 | 2.26 | 1.8 |
| Benzo(a)anthracene | 2.49 | | 2.42 | | 2.30 | 0.032 | 2.26 | 1.2 |
| Chrysene | 2.49 | | 2.42 | | 2.30 | 0.050 | 2.26 | 1.7 |
| Benzo(b)fluoranthene | 2.49 | 0.05 | 2.42 | 0.042 | 2.30 | 0.047 | 2.26 | 1.8 |
| Benzo(k)fluoranthene | 2.49 | 0.049 | 2.42 | 0.043 | 2.30 | 0.039 | 2.26 | 1.3 |
| Benzo(a)pyrene | 2.49 | 0.038 | 2.42 | 0.033 | 2.30 | 0.030 | 2.26 | 1.3 |
| Indeno(1,2,3-cd)pyrene | 2.49 | | 2.42 | | 2.30 | 0.012 | 2.26 | 1.1 |
| Dibenzo(a,h)anthracene | 2.49 | | 2.42 | | 2.30 | | 2.26 | 0.38 |
| Benzo(g,h,i)perylene | 2.49 | 0.022 | 2.42 | | 2.30 | 0.012 | 2.26 | 1.3 |
| 1-Methylnaphthalene | 2.49 | 0.22 | 2.42 | 0.26 | 2.30 | 0.041 | 2.26 | 0.17 |
| Benzo[e]pyrene | 2.49 | 0.036 | 2.42 | 0.029 | 2.30 | 0.031 | 2.26 | 1.3 |
| Perylene | 2.49 | | 2.42 | | 2.30 | 0.0089 | 2.26 | 0.38 |
| 3,6-Dimethylphenanthrene | 2.49 | | 2.42 | | 2.30 | 0 | 2.26 | 0.13 |
| 1-Methylanthracene | 2.49 | 0.049 | 2.42 | 0.040 | 2.30 | 0.016 | 2.26 | 0.27 |
| 1-Methylfluoranthene | 2.49 | | 2.42 | | 2.30 | 0.019 | 2.26 | 0.46 |
| 1-Methylpyrene | 2.49 | | 2.42 | | 2.30 | 0 | 2.26 | 0.13 |
| 2,6-Dimethylnaphthalene | 2.49 | 0.16 | 2.42 | 0.15 | 2.30 | 0.069 | 2.26 | 0.21 |
| 2,3,5-Trimethylnaphthalene | 2.49 | 0.092 | 2.42 | 0.083 | 2.30 | 0.044 | 2.26 | 0.18 |
| 1,1'-Biphenyl | 2.49 | 0.022 | 2.42 | | 2.30 | | 2.26 | |
| Dibenzofuran | 2.49 | | 2.42 | | 2.30 | | 2.26 | 0.12 |
| 1-Methylphenanthrene | 2.49 | 0.084 | 2.42 | 0.082 | 2.30 | 0.025 | 2.26 | 0.14 |
| Dibenzothiophene | 2.49 | 0.029 | 2.42 | 0.028 | 2.30 | 0.011 | 2.26 | 0.13 |

Note:
A "0" value in the sample result column represents a result that was qualified by the lab as "G". A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate.
A "null" value in the sample result column represents a non-detect (ND) result.

**Abbreviations**
µg/L = micrograms per liter

**Appendix G**

Data Evaluation Summaries and Analytical Results – Chlorinated Herbicides

**Table G-1**
**Summary of Herbicides by Method and Event**
**Phase I Report Addendum – Additional Data Evaluation**

| Analyte | Event/ Attempt | Number of Detections (Parent and Duplicate Sample) | | | | | | | Percent Increase for HSM Compared to Other Methods for Total Concentrations When Detected by Both Methods | | Percent Increase for LSM Compared to WW for Total Concentrations When Detected by Both Methods | Percent Increase for HSM Compared to LSM for Particulate Concentrations When Detected by Both Methods | Percent Increase for HSM Compared to LSM for Dissolved Concentrations When Detected by Both Methods |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Total Concentrations (µg/L) | | | Particulates (µg/L) | | Dissolved (µg/L) | | | | | | |
| | | HSM | LSM | WW | HSM | LSM | HSM | LSM | LSM | WW | | | |
| 2,4-DB | All | 2 | 4 | 2 | 0 | 0 | 2 | 4 | -9% | -46% | -49% | | -9% |
| 2,4-D | All | 2 | 2 | 2 | 0 | 0 | 2 | 2 | -17% | -4% | 17% | | -17% |
| 2,4,5-T | All | 0 | 1 | 1 | 0 | 0 | 0 | 1 | | | | | |
| Silvex(2,4,5-TP) | All | 2 | 2 | 2 | 0 | 0 | 2 | 2 | 110% | -47% | -75% | | 110% |
| **Summary** | | | | | | | | | | | | | |
| **4 Analytes** | **1 / 2** | **0** | **1.5** | **0** | **0** | **0** | **0** | **1.5** | | | | | |
| **4 Analytes** | **2 / 2** | **0.5** | **1.0** | **0** | **0** | **0** | **0.5** | **1.0** | **-24%** | | | | **-24%** |
| **4 Analytes** | **1 / 3** | **2.5** | **2.0** | **3.5** | **0** | **0** | **2.5** | **2.0** | **33%** | **-32%** | **-36%** | | **33%** |
| **4 Analytes** | **All** | **1.0** | **1.5** | **1.2** | **0** | **0** | **1.0** | **1.5** | **19%** | **-32%** | **-36%** | | **19%** |
| **Percent of Detected Analytes** | **All** | **25%** | **38%** | **29%** | **0%** | **0%** | **25%** | **38%** | | | | | |

**Conclusions**

The LSM method had the highest number of detections but this result was not statistically significant (see chi-square results).
Where detected in both methods, HSM total concentrations are on average 19% greater than total LSM concentrations.
Where detected in both methods, HSM total concentrations are 32% lower than WW concentrations.
Where detected in both methods, LSM total concentrations are 36% lower than WW concentrations.
Where detected in both methods, HSM dissolved concentrations are on average 19% greater than LSM dissolved concentrations.
No compounds were positively detected using the HSM particulate and LSM particulate analysis.

**Abbreviations**

µg/L = micrograms per liter
% = percent
HSM = high solids mass
LSM = low solids mass
WW = whole water

**Table G-2**
**Statistical Comparison of the Number of Detected Herbicides by Method and Event**
**Phase I Report Addendum – Additional Data Evaluation**

| Event | Number of Detections (Total Water Concentration) | | | Maximum Possible Number of Detections[1] | Fisher Exact Test (p-value)[2] | | |
|---|---|---|---|---|---|---|---|
| | HSM | LSM | WW | | HSM vs. LSM | HSM vs. WW | LSM vs. WW |
| **1/2** | 0 | 3 | 0 | 8 | 0.200 | 1.000 | 0.200 |
| **2/2** | 1 | 2 | 0 | 8 | 0.067 | 1.000 | 0.467 |
| **1/3** | 5 | 4 | 7 | 8 | 1.000 | 0.569 | 0.282 |
| **All** | 6 | 9 | 7 | 24 | 0.534 | 1.000 | 0.760 |

**Notes**
[1] Total number of detections for event includes 2 duplicates and 4 compounds.
[2] The p-value shown is based on a two-sided Fisher Exact Test. A p-value less than 0.05 is considered evidence of a significant difference among methods compared.

**Conclusion**
All methods are similar with respect to the number of detected compounds.

**Abbreviations**
HSM = high solids mass
LSM = low solids mass
WW = whole water

**Table G-3**
**HSM Particulate Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| | HSM Particulate Sample Collection | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Event 1 Attempt 2 (7-1-13 PR116) | | | | Event 2 Attempt 2 (12-07-13 PR135) | | | | Event 1 Attempt 3 (04-30-14 PR146) | | | |
| | PR1CSOCLYHP-01B | | PR1HPDUP-01B | | PR1CSOCLYHP-02B | | PR1HPDUP-02B | | PR1CSOCLYHP-01C | | PR1HPDUP-01C | |
| Wet weight (gram) | 50.39 | | 50.21 | | 50.23 | | 42.25 | | 49.37 | | 50.73 | |
| % Solids | 35 | | 32.9 | | 42.5 | | 40.8 | | 48.6 | | 62.3 | |
| **Compound Identified** | **Sample Result ug/Kg** | **Converted Sample Result ug/L** | **Sample Result ug/Kg** | **Converted Sample Result ug/L** | **Sample Result ug/Kg** | **Converted Sample Result ug/L** | **Sample Result ug/Kg** | **Converted Sample Result ug/L** | **Sample Result ug/Kg** | **Converted Sample Result ug/L** | **Sample Result ug/Kg** | **Converted Sample Result ug/L** |
| 2,4,5-T | 0 | 0 | 0 | 0 | | | | | | | | |
| 2,4-DB | | | | | | | | | | | | |

Note:
A "0" value in the sample result column represents a result that was qualified by the lab as "G". A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate.
A "null" value in the sample result column represents a non-detect (ND) result.

<u>**Abbreviations**</u>
µg/L = micrograms per liter
µg/Kg = micrograms per kilogram

**Table G-4**
**HSM Dissolved Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| Compound Identified | HSM Dissolved Sample Collection | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Event 1 Attempt 2 (07-01-13 PR117) | | | | Event 2 Attempt 2 (12-07-13 PR138) | | | | Event 1 Attempt 3 (04-30-14 PR147) | | | |
| | PR1CSOCLYHD-01B | | PR1HDDUP-01B | | PR1CSOCLYHD-02B | | PR1HDDUP-02B | | PR1CSOCLYHD-01C | | PR1HDDUP-01C | |
| | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L |
| 2,4-DB | 0.975 | | 1.015 | | 0.975 | 0.31 | 0.975 | | 1.01 | 0.47 | 0.960 | |
| 2,4-D | 0.975 | | 1.015 | | 0.975 | | 0.975 | | 1.01 | 0.40 | 0.960 | 0.41 |
| 2,4,5-T | 0.975 | | 1.015 | | 0.975 | | 0.975 | | 1.01 | 0 | 0.960 | 0 |
| Silvex(2,4,5-TP) | 0.975 | | 1.015 | | 0.975 | | 0.975 | | 1.01 | 0.023 | 0.960 | 0.021 |

Note:
A "0" value in the sample result column represents a result that was qualified by the lab as "G". A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate.
A "null" value in the sample result column represents a non-detect (ND) result.

**Abbreviations**

µg/L = micrograms per liter

**Table G-5**
**LSM Particulate Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| | LSM Particulate Sample Collection | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Event 1 Attempt 2 (07-05-13 PR119) | | | | Event 2 Attempt 2 (12-11-13 PR140) | | | | Event 1 Attempt 3 (05-05-2015 PR149) | | | |
| | PR1CSOCLYLP-01B | | PR1LPDUP-01B | | PR1CSOCLYLP-02B | | PR1LPDUP-02B | | PR1CSOCLYLP-01C | | PR1LPDUP-01C | |
| TSS (mg/L) | 64.8 | | 67.1 | | 8.4 | | 13.5 | | 8 | | 8 | |
| Total Liters Filtered (L) | 0.984 | | 0.994 | | 1.042 | | 1.010 | | 1.053 | | 1.027 | |
| **Compound Identified** | **Weight gram** | **Sample Result ug/Kg** | **Weight gram** | **Sample Result ug/Kg** | **Weight gram** | **Sample Result ug/Kg** | **Weight gram** | **Sample Result ug/Kg** | **Weight gram** | **Sample Result ug/Kg** | **Weight gram** | **Sample Result ug/Kg** |
| N/A | 0.0640 | | 0.0666 | | 0.0088 | | 0.0136 | | 0.00842 | | 0.00822 | |

Note:
A "0" value in the sample result column represents a result that was qualified by the lab as "G". A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate.
A "null" value in the sample result column represents a non-detect (ND) result.

**Abbreviations**
µg/Kg = micrograms per kilogram
mg/L = milligrams per liter

**Table G-6**
**LSM Dissolved Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| | LSM Dissolved Sample Collection | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Event 1 Attempt 2 (07-05-13 PR120) | | | | Event 2 Attempt 2 (12-11-13 PR141) | | | | Event 1 Attempt 3 (05-05-14 PR150) | | | |
| | PR1CSOCLYLD-01B | | PR1LDDUP-01B | | PR1CSOCLYLD-02B | | PR1LDDUP-02B | | PR1CSOCLYLD-01C | | PR1LDDUP-01C | |
| Compound Identified | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L |
| 2,4-DB | 1.012 | 0.45 | 0.994 | 1 | 1.04 | | 1.01 | 0.41 | 1.00 | | 1.035 | 0.44 |
| 2,4-D | 1.012 | | 0.994 | | 1.04 | | 1.01 | | 1.00 | 0.47 | 1.035 | 0.51 |
| 2,4,5-T | 1.012 | | 0.994 | | 1.04 | | 1.01 | 0.21 | 1.00 | 0 | 1.035 | 0 |
| Silvex(2,4,5-TP) | 1.012 | 0.02 | 0.994 | | 1.04 | | 1.01 | | 1.00 | | 1.035 | 0.021 |

Note:
A "0" value in the sample result column represents a result that was qualified by the lab as "G". A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate.
A "null" value in the sample result column represents a non-detect (ND) result.

**Abbreviations**
µg/L = micrograms per liter

**Table G-7**
**Whole Water Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| Compound Identified | Whole Water Sample Collection | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Event 1 Attepmt 2 (07-01-13 PR115) | | | | Event 2 Attempt 2 (12-07-13 PR134) | | | | Event 1 Attempt 3 (04-30-14 PR145) | | | |
| | PR1CSOCLYWW-01B | | PR1WWDUP-01B | | PR1CSOCLYWW-02B | | PR1WWDUP-02B | | PR1CSOCLYWW-02B | | PR1WWDUP-02B | |
| | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L |
| 2,4-DB | 0.990 | | 0.980 | | 1.025 | | 1.015 | | 0.935 | 0.59 | 1.0 | 0.28 |
| 2,4-D | 0.990 | | 0.980 | | 1.025 | | 1.015 | | 0.935 | 0.36 | 1.0 | 0.48 |
| 2,4,5-T | 0.990 | | 0.980 | | 1.025 | | 1.015 | | 0.935 | 0 | 1.0 | 0.1 |
| Silvex(2,4,5-TP) | 0.990 | | 0.980 | | 1.025 | | 1.015 | | 0.935 | 0.051 | 1.0 | 0.032 |

Note:
A "0" value in the sample result column represents a result that was qualified by the lab as "G". A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate.
A "null" value in the sample result column represents a non-detect (ND) result.

<u>**Abbreviations**</u>
µg/L = micrograms per liter

# Appendix H

Data Evaluation Summaries and Analytical Results – Cyanide

**Table H-1**
**Summary of Cyanide by Method and Event**
**Phase I Report Addendum – Additional Data Evaluation**

| Analyte | Event/ Attempt | Number of Detections (Parent and Duplicate Sample) | | | | | | | Percent Increase for HSM Compared to Other Methods for Total Concentrations When Detected by Both Methods | | Percent Increase for LSM Compared to WW for Total Concentrations When Detected by Both Methods | Percent Increase for HSM Compared to LSM for Particulate Concentrations When Detected by Both Methods | Percent Increase for HSM Compared to LSM for Dissolved Concentrations When Detected by Both Methods |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Total Concentrations (µg/L) | | | Particulates (µg/L) | | Dissolved (µg/L) | | | | | | |
| | | HSM | LSM | WW | HSM | LSM | HSM | LSM | LSM | WW | | | |
| CN | All | 4 | NA | 4 | 4 | NA | 2 | NA | | | | | |
| **Summary** | | | | | | | | | | | | | |
| **1 Analyte** | **1 / 2** | **1.0** | **NA** | **1.0** | **1.0** | **NA** | **1.0** | **NA** | | 12% | | | |
| **1 Analyte** | **2 / 2** | **1.0** | **NA** | **1.0** | **1.0** | **NA** | **0.0** | **NA** | | -98% | | | |
| **1 Analyte** | **All** | **1.0** | **NA** | **1.0** | **1.0** | **NA** | **0.5** | **NA** | | -43% | | | |
| **Percent of Detected Analytes** | **All** | **100%** | **NA** | **100%** | **100%** | **NA** | **50%** | **NA** | | | | | |

<u>Conclusions</u>
The frequency of detection was same (equal) for HSM total and whole water concentrations.
Where detected in both methods, HSM total concentrations are 43% lower than WW concentrations. However, it should be noted that total concentrations in Event 1/2 were similar between HSM total and WW but WW concentrations were of a magnitue approximately 10 times greater than HSM in Event 2/2.

<u>Abbreviations</u>
µg/L = micrograms per liter
% = percent
HSM = high solids mass
LSM = low solids mass
WW = whole water
CN = cyanide
NA = Cyanide was not analyzed for LSM particulate/dissolved samples.

**Table H-2**
**HSM Particulate Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| | HSM Particulate Sample Collection | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Event 1 Attempt 2 (7-1-13 PR116) | | | | Event 2 Attempt 2 (12-07-13 PR135) | | | |
| | PR1CSOCLYHP-01B | | PR1HPDUP-01B | | PR1CSOCLYHP-02B | | PR1HPDUP-02B | |
| Wet weight (gram) | 2.03 | | 2.00 | | 1.01 | | 1 | |
| % Solids | 26.7 | | 26.3 | | 42.5 | | 40.8 | |
| **Compound Identified** | **Sample Result mg/Kg** | **Converted Sample Result ug/L** | **Sample Result mg/Kg** | **Converted Sample Result ug/L** | **Sample Result mg/Kg** | **Converted Sample Result ug/L** | **Sample Result mg/Kg** | **Converted Sample Result ug/L** |
| Cyanide | 5.8 | 0.138 | 6.400 | 0.150 | 2.4 | 0.0905 | 1.60 | 0.0579 |

Note:
A "0" value in the sample result column represents a result that was qualified by the lab as "G". A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate.
A "null" value in the sample result column represents a non-detect (ND) result.

**Abbreviations**
µg/L = micrograms per liter
mg/KG = milligrams per kilogram

**Table H-3**
**HSM Dissolved Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| Compound Identified | HSM Dissolved Sample Collection | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Event 1 Attempt 2 (07-01-13 PR117) | | | | Event 2 Attempt 2 (12-07-13 PR138) | | | |
| | PR1CSOCLYHD-01B | | PR1HDDUP-01B | | PR1CSOCLYHD-02B | | PR1HDDUP-02B | |
| | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L |
| Cyanide | 0.05 | 31.3 | 0.05 | 31.6 | 0.05 | | 0.05 | |

Note:
A "0" value in the sample result column represents a result that was qualified by the lab as "G". A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate.
A "null" value in the sample result column represents a non-detect (ND) result.

**Abbreviations**
µg/L = micrograms per liter

**Table H-4**
**Whole Water Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| Compound Identified | Whole Water Sample Collection | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Event 1 Attepmt 2 (07-01-13 PR115) | | | | Event 2 Attempt 2 (12-07-134 PR134) | | | |
| | PR1CSOCLYWW-01B | | PR1WWDUP-01B | | PR1CSOCLYWW-01B | | PR1WWDUP-01B | |
| | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L |
| Cyanide | 0.05 | 29.3 | 0.05 | 27.2 | 0.05 | 3.8 | 0.05 | 2.3 |

Note:
A "0" value in the sample result column represents a result that was qualified by the lab as "G". A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate.
A "null" value in the sample result column represents a non-detect (ND) result.

**Abbreviations**
µg/L = micrograms per liter

**Appendix I**

Data Evaluation Summaries and Analytical Results – VOCs

**Table I-1**
**Summary of VOCs by Method and Event**
**Phase I Report Addendum – Additional Data Evaluation**

| Analyte | Event/ Attempt | Number of Detections (Parent and Duplicate Sample) | | | | | | | Percent Increase for HSM Compared to Other Methods for Total Concentrations When Detected by Both Methods | | Percent Increase for LSM Compared to WW for Total Concentrations When Detected by Both Methods | Percent Increase for HSM Compared to LSM for Particulate Concentrations When Detected by Both Methods | Percent Increase for HSM Compared to LSM for Dissolved Concentrations When Detected by Both Methods |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Total Concentrations (µg/L) | | | Particulates (µg/L) | | Dissolved (µg/L) | | | | | | |
| | | HSM | LSM | WW | HSM | LSM | HSM | LSM | LSM | WW | | | |
| 1,4-Dichlorobenzene | All | 2 | NA | 0 | 2 | NA | 0 | NA | | | | | |
| **Summary** | | | | | | | | | | | | | |
| **6 Analytes** | **1 / 2** | **1.0** | **NA** | **0.0** | **1.0** | **NA** | **0.0** | **NA** | | | | | |
| **6 Analytes** | **2 / 1** | **0.0** | **NA** | **0.0** | **0.0** | **NA** | **0.0** | **NA** | | | | | |
| **6 Analytes** | **All** | **0.5** | **NA** | **0.0** | **0.5** | **NA** | **0.0** | **NA** | | | | | |
| **Percent of Detected Analytes** | **All** | **8%** | **NA** | **0%** | **8%** | **NA** | **0%** | **NA** | | | | | |

**Conclusions**
Samples were analyzed for a total of 6 VOC compounds, however, only VOC compounds that were positively identified during analysis are presented.
Positive results were reported for HSM particulate analysis only.

**Abbreviations**
µg/L = micrograms per liter
% = percent
HSM = high solids mass
LSM = low solids mass
WW = whole water
NA = Volatile organic compounds (VOCs) were not analyzed for LSM particulate/dissolved samples.

**Table I-2**
**Statistical Comparison of the Number of Detected VOCs by Method and Event**
**Phase I Report Addendum – Additional Data Evaluation**

| Event | Number of Detections (Total Water Concentration) | | | Maximum Possible Number of Detections[1] | Fisher Exact Test (p-value)[2] | | |
|---|---|---|---|---|---|---|---|
| | HSM | LSM | WW | | HSM vs. LSM | HSM vs. WW | LSM vs. WW |
| **1/2** | 2 | NA | 0 | 12 | NA | 0.478 | NA |
| **2/2** | 0 | NA | 0 | 12 | NA | 1.000 | NA |
| **All** | 2 | NA | 0 | 24 | NA | 0.489 | NA |

**Notes**
[1] Total number of detections for event includes 2 duplicates and 6 compounds.

[2] The p-value shown is based on a two-sided Fisher Exact Test. A p-value less than 0.05 is considered evidence of a significant difference among methods compared.

**Conclusion**
HSM had only 2 detections while WW had none.
LSM was not evaluated.
Differences were not statistically significant.

**Abbreviations**
HSM = high solids mass
LSM = low solids mass
WW = whole water
NA = Not analyzed.

**Table I-3**
**HSM Particulate Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| | HSM Particulate Sample Collection | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Event 1 Attempt 2 (7-1-13 PR116) | | | | Event 2 Attempt 1 (10-07-13 PR129) | | | |
| | PR1CSOCLYHP-01B | | PR1HPDUP-01B | | PR1CSOCLYHP-02A2 | | PR1HPDUP-02A2 | |
| Wet weight (gram) | 2.24 | | 3.26 | | 2.23 | | 1.94 | |
| % Solids | 27 | | 26 | | 34 | | 34 | |
| **Compound Identified** | **Sample Result ug/Kg** | **Converted Sample Result ug/L** | **Sample Result ug/Kg** | **Converted Sample Result ug/L** | **Sample Result ug/Kg** | **Converted Sample Result ug/L** | **Sample Result ug/Kg** | **Converted Sample Result ug/L** |
| 1,4-Dichlorobenzene | 47 | 0.00113 | 15 | 0.000347 | | | | |
| Chlorobenzene | 0 | 0 | 0 | 0 | | | | |

Note:
A "0" value in the sample result column represents a result that was qualified by the lab as "G". A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate.
A "null" value in the sample result column represents a non-detect (ND) result.

**Abbreviations**
µg/L = micrograms per liter
µg/KG = micrograms per kilogram

**Table I-4**
**HSM Dissolved Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| Compound Identified | HSM Dissolved Sample Collection | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Event 1 Attempt 2 (07-01-13 PR117) | | | | Event 2 Attempt 1 (10-07-13 PR130) | | | |
| | PR1CSOCLYHD-01B | | PR1HDDUP-01B | | PR1CSOCLYHD-02A | | PR1HDDUP-02A | |
| | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L |
| 1,4-Dichlorobenzene | 0.025 | 0 | 0.025 | 0 | 0.025 | 0 | 0.025 | 0 |

Note:
A "0" value in the sample result column represents a result that was qualified by the lab as "G". A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate.
A "null" value in the sample result column represents a non-detect (ND) result.

**Abbreviations**

µg/L = micrograms per liter

**Table I‑5**
**Whole Water Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| Compound Identified | Whole Water Sample Collection | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Event 1 Attepmt 2 (07‑01‑13 PR115) | | | | Event 2 Attempt 1 (10‑07‑13 PR128) | | | |
| | PR1CSOCLYWW‑01B | | PR1WWDUP‑01B | | PR1CSOCLYWW‑02A | | PR1WWDUP‑02A | |
| | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L | Volume Liters | Sample Result ug/L |
| 1,4‑Dichlorobenzene | 0.025 | 0 | 0.025 | 0 | 0.025 | 0 | 0.025 | 0.0000 |

Note:
A "0" value in the sample result column represents a result that was qualified by the lab as "G". A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate.
A "null" value in the sample result column represents a non‑detect (ND) result.

**Abbreviations**

µg/L = micrograms per liter

**Appendix J**

Data Evaluation Summaries and Analytical Results – TEPH

Table J-1
Summary of Total EPH by Method and Event
Phase I Report Addendum – Additional Data Evaluation

| Analyte | Event/ Attempt | Number of Detections (Parent and Duplicate Sample) Total Concentrations (mg/L) HSM | LSM | WW | Particulates (mg/L) HSM | LSM | Dissolved (mg/L) HSM | LSM | Percent Increase for HSM Compared to Other Methods for Total Concentrations When Detected by Both Methods LSM | WW | Percent Increase for LSM Compared to WW for Total Concentrations When Detected by Both Methods | Percent Increase for HSM Compared to LSM for Particulate Concentrations When Detected by Both Methods | Percent Increase for HSM Compared to LSM for Dissolved Concentrations When Detected by Both Methods |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TEPH | All | 4 | NA | 4 | 4 | NA | 2 | NA | | | | | |
| **Summary** | | | | | | | | | | | | | |
| **1 Analyte** | **1 / 2** | **1.0** | **NA** | **1.0** | **1.0** | **NA** | **1.0** | **NA** | | -22% | | | |
| **1 Analyte** | **2 / 2** | **1.0** | **NA** | **1.0** | **1.0** | **NA** | **0.0** | **NA** | | -88% | | | |
| **1 Analyte** | **All** | **1.0** | **NA** | **1.0** | **1.0** | **NA** | **0.5** | **NA** | | -55% | | | |
| **Percent of Detected Analytes** | **All** | **100%** | **NA** | **100%** | **100%** | **NA** | **50%** | **NA** | | | | | |

**Conclusions**
The frequency of detection was same (equal) for HSM total and whole water concentrations.
Where detected in both methods, HSM total concentrations are 55% lower than WW concentrations.
NA = total extrctable petroleum hydrocarbon (TEPH) was not analyzed for LSM particulate/dissolved samples.

**Abbreviations**
mg/L = milligrams per liter
% = percent
HSM = high solids mass
LSM = low solids mass
WW = whole water

**Table J-2**
**HSM Particulate Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| | HSM Particulate Sample Collection | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Event 1 Attempt 2 (7-1-13 PR116) | | | | Event 2 Attempt 2 (12-07-13 PR135) | | | |
| | PR1CSOCLYHP-01B | | PR1HPDUP-01B | | PR1CSOCLYHP-02B | | PR1HPDUP-02B | |
| Wet weight (gram) | 30.24 | | 30.18 | | 30.03 | | 29.43 | |
| % Solids | 35 | | 32.9 | | 42.5 | | 40.8 | |
| **Compound Identified** | **Sample Result mg/Kg** | **Converted Sample Result mg/L** | **Sample Result mg/Kg** | **Converted Sample Result mg/L** | **Sample Result mg/Kg** | **Converted Sample Result mg/L** | **Sample Result mg/Kg** | **Converted Sample Result mg/L** |
| TEPH | 13,000 | 0.405 | 13,000 | 0.380 | 13,000 | 0.491 | 7,700 | 0.279 |

Note:
A "0" value in the sample result column represents a result that was qualified by the lab as "G". A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate.
A "null" value in the sample result column represents a non-detect (ND) result.

**Abbreviations**
mg/L = milligrams per liter
mg/Kg = milligrams per kilogram
TEPH = total extrctable petroleum hydrocarbon

**Table J-3**
**HSM Dissolved Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| Compound Identified | HSM Dissolved Sample Collection | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Event 1 Attempt 2 (07-01-13 PR117) | | | | Event 2 Attempt 2 (12-07-13 PR138) | | | |
| | PR1CSOCLYHD-01B | | PR1HDDUP-01B | | PR1CSOCLYHD-02B | | PR1HDDUP-02B | |
| | Volume Liters | Sample Result mg/L | Volume Liters | Sample Result mg/L | Volume Liters | Sample Result mg/L | Volume Liters | Sample Result mg/L |
| TEPH | 0.995 | 5.6 | 1.045 | 3.5 | 1.055 | | 1.030 | |

Note:
A "0" value in the sample result column represents a result that was qualified by the lab as "G". A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate.
A "null" value in the sample result column represents a ND result.

**Abbreviations**
mg/L = milligrams per liter
TEPH = total extrctable petroleum hydrocarbon

**Table J-4**
**Whole Water Analytical Results**
**Phase I Report Addendum – Additional Data Evaluation**

| Compound Identified | Whole Water Sample Collection | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Event 1 Attepmt 2 (07-01-13 PR115) | | | | Event 2 Attempt 2 (12-07-13 PR134) | | | |
| | PR1CSOCLYWW-01B | | PR1WWDUP-01B | | PR1CSOCLYWW-02B | | PR1WWDUP-02B | |
| | Volume Liters | Sample Result mg/L | Volume Liters | Sample Result mg/L | Volume Liters | Sample Result mg/L | Volume Liters | Sample Result mg/L |
| TEPH | 1.020 | 5.0 | 1.060 | 7.7 | 1.050 | 2.22 | 0.985 | 4.200 |

Note:
A "0" value in the sample result column represents a result that was qualified by the lab as "G". A "G" qualifier indicates the presence of a compound that meets the identification criteria; the result is below the PQL but above the method detection limit (MDL) or estimated detection limit (EDL), where appropriate.
A "null" value in the sample result column represents a non-detect (ND) result.

**Abbreviations**
mg/L = milligrams per liter
TEPH = total extrctable petroleum hydrocarbon